



RICE

UNIVERSITY

General Announcements
1997 ~ 1998



NOTE: This catalog represents the most accurate information available at the time of publication. The university reserves the right to correct or otherwise change any such information at its sole discretion. With respect to course offerings, the departments have attempted to anticipate which courses will be offered, and by whom and when such courses will be taught. However, course offerings may be affected by changes in faculty, student demand, and funding. Although efforts have been made to indicate these uncertainties, where appropriate, course offerings are subject to change without notice.

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Telephone: Campus Operator (713) 527-8101

Homepage Address: <http://www.rice.edu>

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Admission, Catalogs, Applications	Office of Admission 109 Lovett Hall; (713) 527-4036
Business Matters	Office of the Cashier 10 Allen Center; (713) 527-4946
Career Services, Part-time Employment off Campus	Career Services Center Rice Memorial Center; (713) 527-4055
Credits, Transcripts	Office of the Registrar 116 Allen Center; (713) 527-4999
Financial Aid, Scholarships, Part-time Employment on Campus	Financial Aid Office 201 Lovett Hall; (713) 527-4958
Graduate Study	Chair of the Appropriate Department
Undergraduate and Graduate Students, Undergraduate Curricula	Office of the Vice President for Student Affairs 101 Lovett Hall; (713) 527-4996

It is the policy of Rice University to attract qualified individuals of diverse backgrounds to its faculty, staff, and student body. Accordingly, Rice University does not discriminate against any individual on the basis of race, color, religion, sex, sexual orientation, national or ethnic origin, age, disability, or veteran status in its admissions, its educational programs, or employment of faculty or staff. The university takes affirmative action in employment by recruiting, hiring, and advancing women, members of a minority group, Vietnam era veterans, and special disabled veterans.

Rice University

General Announcements

1997-98



RICE

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Message from the President

The *General Announcements* of Rice University presents the people, the programs, and the policies that combine to make this university a singular center of teaching and research. The *General Announcements* is more than a faculty directory or a course catalog. Rather, this publication is a tangible expression of the vision of William Marsh Rice and the inspiration of Edgar Odell Lovett, Rice's first president, as executed by the university's board of trustees and its administration, faculty, and staff.

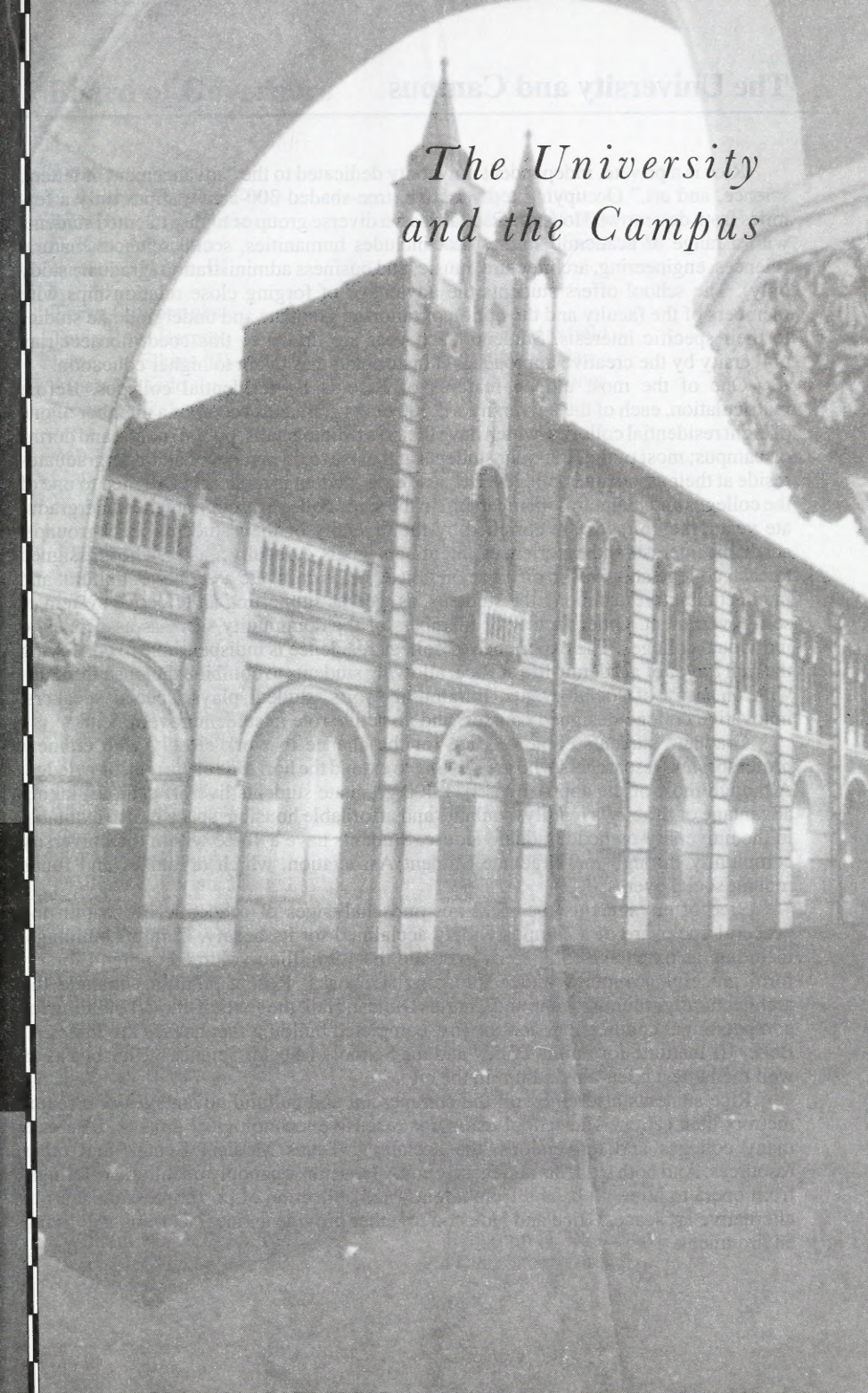
I encourage you to familiarize yourself with this "user's manual" for Rice University. Discover for yourself the wide range of information presented here: the distinctive academic backgrounds of our faculty; the rules and responsibilities of student life, both undergraduate and graduate; the richness of our degree programs; and the depth of our curriculum.

The *General Announcements* serves as a reminder of the high standards to which Rice has always aspired. These standards are as vital and robust as they were when the first class of Rice Institute students matriculated in 1912.

We welcome your interest in Rice and attention to the *General Announcements*.

Malcolm Gillis
President
William Marsh Rice University

The University and the Campus



The University and Campus

Rice is a private, independent university dedicated to the “advancement of letters, science, and art.” Occupying a distinctive, tree-shaded 300-acre campus only a few miles from downtown Houston, Rice attracts a diverse group of highly talented students with a range of academic studies that includes humanities, social sciences, natural sciences, engineering, architecture, music, and business administration (graduate study only). The school offers students the advantage of forging close relationships with members of the faculty and the option of tailoring graduate and undergraduate studies to their specific interests. Students each year are drawn to this coed, nonsectarian university by the creative approaches it historically has taken to higher education.

One of the most unique features of Rice is its residential colleges. Before matriculation, each of the university’s 2,600 undergraduates becomes a member of one of eight residential colleges, which have their own dining halls, public rooms, and dorms on campus; most of the first-year students and close to 65 percent of all undergraduates reside at their associated colleges. Because each student is randomly assigned to one of the colleges and maintains membership in the same college throughout the undergraduate years, the colleges are enriched by the diversity of their students’ backgrounds, academic interests and experiences, talents, and goals. A faculty master, who is assigned to each college and lives in an adjacent house, helps cultivate a variety of cultural and intellectual interests among the students, as well as supporting an effective system of self-government. Other faculty or members of the community serve as associates to individual colleges. The experience of college residence is indispensable to conveying the rich flavor of academic life at Rice, allowing students to combine their usual studies with an array of social events, intramural sports, student plays, special speakers, innovative college-designed courses, and an active role in student government.

Graduate students come to Rice for the chance to work closely with eminent professors and researchers who are seeking to extend the horizons of current knowledge. Although most of the approximately 1,400 graduate students live off campus, taking advantage of the city’s readily available and affordable housing, space is also available in the university-owned Graduate House. Students have a voice within the university community through the Graduate Student Association, which organizes and funds regular social events.

Rice offers students the pleasures and challenges of academic life within the peaceful enclosure of a campus widely acclaimed for its beauty. Campus buildings, including an extensive computer center and the 1.9 million-volume Fondren Library, form graceful groupings under spreading live oaks. Recent additions include the architecturally stunning Anne and Charles Duncan Hall, the state-of-the-art building for computational engineering, and the just-completed building that houses the James A. Baker III Institute for Public Policy and the School of Social Sciences. Rice boasts as well the largest open-air stadium in the city.

Rice students also enjoy all the commercial and cultural advantages of a major metropolitan center. The school maintains extensive technological links to the area’s many colleges and universities, the acclaimed Texas Medical Center, and other resources. And both students and faculty enjoy Houston’s panoply of cultural offerings, from opera to blues clubs and from a renowned collection of postimpressionist art to alternative art spaces. Rice and Houston together provide an ideal learning and living environment.

Board of Governors

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Trustees Emeriti

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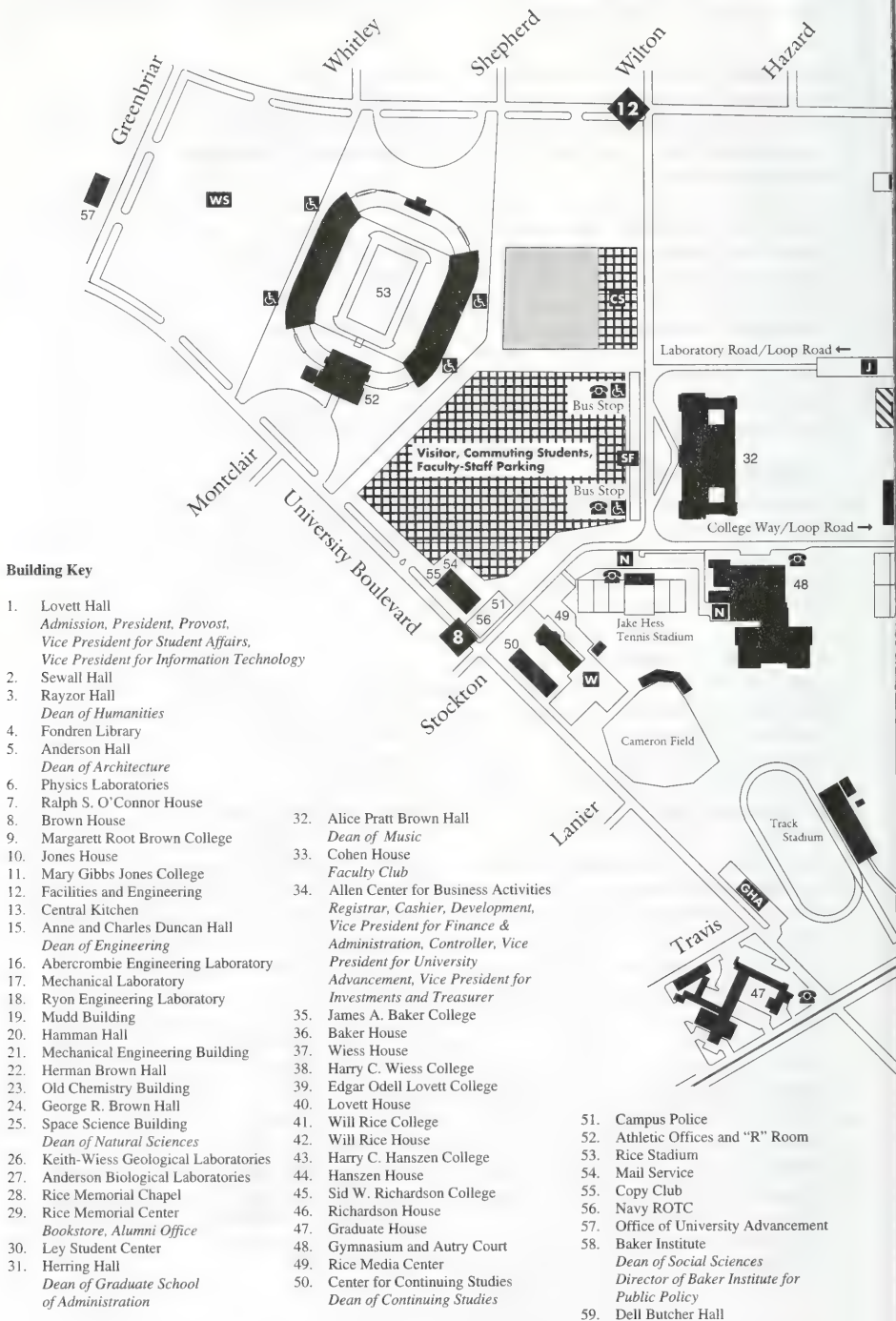
C. M. Hudspeth
Edward W. Kelley, Jr.
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Jack T. Trotter

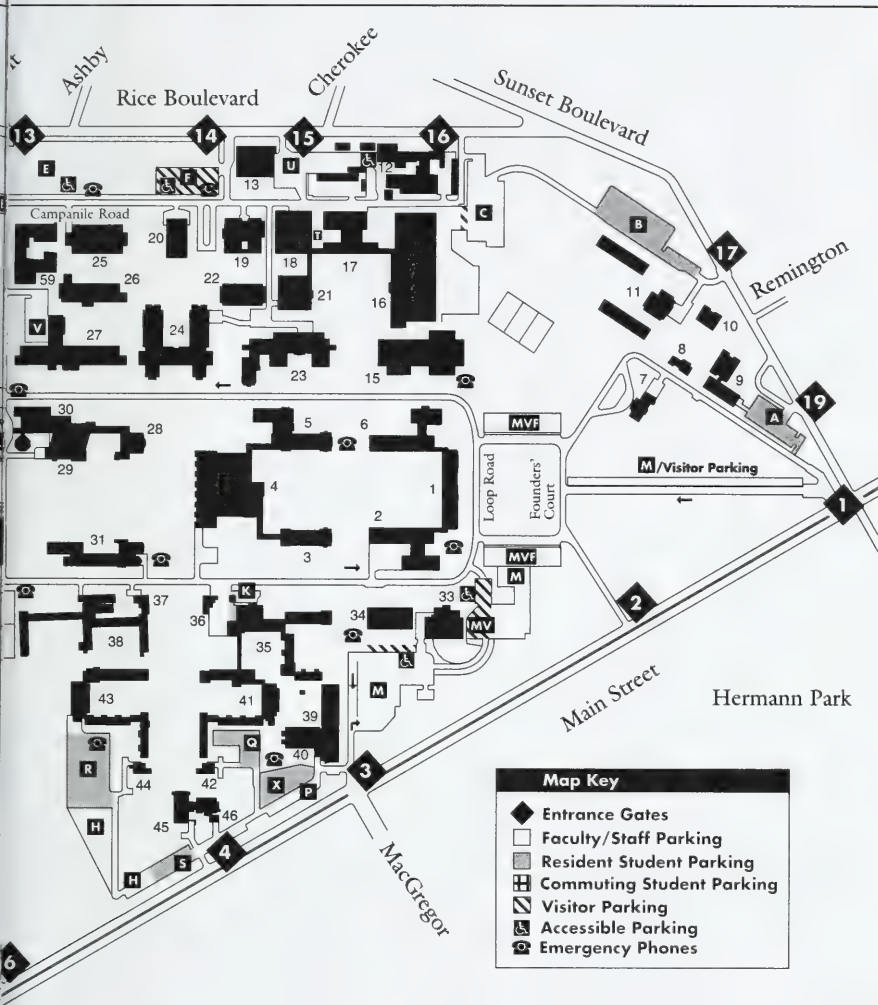
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J. Thomas Eubank
William S. Farish, III
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Gerald D. Hines
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J. Hugh Liedtke
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Jerry McCleskey
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Pat H. Moore
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Stephen J. Shaper
Harry K. Smith
Stephen B. Smith
Thomas D. Smith
Louis D. Spaw, Jr.
Selby W. Sullivan
Benjamin N. Woodson
Helen Saba Worden

Rice University Campus Map





Map Key

- ◆ Entrance Gates
- Faculty/Staff Parking
- Resident Student Parking
- ▨ Commuting Student Parking
- ▤ Visitor Parking
- ♿ Accessible Parking
- ☎ Emergency Phones

Parking Key

- | | | | |
|-----|-------------------------------------|----|---|
| A | Brown College Residents Lot | N | Autry Court Lot |
| B | Jones College Residents Lot | P | Main Street Lot |
| C | Abercrombie Lot | Q | Will Rice College Residents Lot |
| CS | Commuting Students East Stadium Lot | R | Baker-Hansen-Wiess Colleges Residents Lot |
| E | North Lot | S | Richardson College Residents Lot |
| F | North Visitors Lot | SF | Alice Pratt Brown Hall Lot |
| GHA | Graduate House Annex | T | Ryon-Mechanical Laboratory Lot |
| H | Herring Hall Lot | U | Facilities and Engineering Lot |
| J | Laboratory Road Lot | V | Biology-Geology Lot |
| K | Baker College-Food and Housing Lot | W | Continuing Studies-Media Center Lot |
| L | Central Visitors Lot | WS | West Stadium Lot |
| M | Allen Center-Cohen House Lot | X | Lovett College Residents Lot |
| MV | Cohen House Visitors Lot | | |
| MVF | Founders's Court Visitors Lot | | |

*General Information
for All Students*



Student Responsibility

The university expects all Rice students to exercise personal responsibility over their actions. Their behavior should reflect a respect for the law and for their contractual obligations, a consideration for the rights of others, and shared standards of considerate and ethical behavior.

Rice encourages self-discipline, recognizing that effective student government, including judicial processes, and the integrity of the honor system depend on the willingness of all students to meet community standards of conduct.

The university, however, reserves the right to insist on the withdrawal of any student whose conduct it judges to be clearly detrimental to the best interests of either the student or the university. The appropriate authorities take such action only after careful consideration.

No individual or group may use the name of the university or one of its colleges without prior approval of the university or the college.

The Honor System

One of the oldest and proudest traditions at Rice, the honor system is administered by the Honor Council, whose student members are elected each year by the student body. Adopted by a student vote in 1916, the honor system has remained essentially the same since that time but for changes in the procedures and membership of the Honor Council.

Students take all written examinations and complete any specifically designated assignments under the honor system. By committing themselves to the honor system, all students accept responsibility for assuring the integrity of the examinations and assignments conducted under it. The Honor Council is responsible for investigating reported violations and for conducting a hearing when the facts warrant. The assistant dean of student judicial programs, who reviews the results of the investigations and hearing, then considers the council's recommendations when issuing penalties.

The Honor Council conducts an ongoing program to acquaint new students and faculty with the honor system.

Faculty Grading Guidelines

The Committee on Examinations and Standing has drawn up the following guidelines on grading:

- The evaluation of the student's performance in a course and a decision on the appropriate grade is the responsibility of the designated instructor or instructors in the course.
- No student should be given an extension of time or opportunities to improve a grade that are not available to all members of the class, except for verified illness or justified absence from campus. Students who have three scheduled final examinations in two consecutive calendar days may, however, take one of the examinations at another time. Except for scheduled exams, no course assignments may be due between the last day of classes and the last day of the final examination period.

- Students in independent study courses are not to be allowed an extension beyond the time when grades are due. Faculty are to submit grades at the end of the semester for such students based on work completed during the semester. The instructor directing the independent study bears responsibility with the student for ensuring that the work undertaken is appropriate to the span of a semester and for determining the degree credit to be received.
- The basis for grading and the expectations on all written assignments or tests should be clearly explained to the class in advance, preferably in writing at the beginning of the semester. The instructor should explain clearly which assignments or homework are covered by the honor system and which are not. To prevent allegations of plagiarism on written assignments, students should be warned that all direct and indirect quotations from other sources should be properly acknowledged. The instructor should explain the extent to which the student's paper is expected to be independent of the references and clearly distinguishable from them.
- Instructors should be willing to give any student an explanation of his or her grade as consistent with the grading for the rest of the class. For this reason, the committee urges the faculty to preserve all examinations and written material not returned to students as well as grade records for the semester for at least one month into the following semester so that students may, if they wish, review with their instructor the basis for the grade received.
- Instructors may not change a semester grade after the grade sheet has been submitted to the registrar except for a clerical error in calculating the grade. This is a long-standing university rule of which the faculty are reminded by the registrar at the end of each semester. It is designed in part to protect the faculty from student pressure for grade changes. All other grade changes, including retroactive change to *withdrawal* or *incomplete*, must be approved by the Committee on Examinations and Standing on the basis of a written petition from the student and on information from the instructor.
- There is no university requirement that a final examination be given in a course. It is university policy that final examinations that cover more than the material since the last examination, that are the only exam in the course, or that are comprehensive of the entire course may be given only during the final examination period. Such examinations may not, for example, be labeled "tests" and administered during the last week of classes. Final examinations are normally of three hours duration. Faculty who, under exceptional circumstances, wish to give longer examinations may do so only if the exam is scheduled as take-home. Under no circumstances may final exams exceed five hours. The "due date" for all take-home final exams is the end of the examination period.
- First-year students receive midsemester grades around the eighth week of the fall and spring semesters so that they can, if advisable, enroll in tutoring or drop a class for which they may not be prepared. Faculty who teach first-year students in any of their classes will be asked to submit grades of standing for these students during the *seventh week* of the semester and should schedule the grading of tests, quizzes, or homework assignments accordingly. These grades are not recorded on the student's transcript nor calculated in the grade point average, but they are important indicators for students and their faculty advisers.

- Departments using teaching associates, adjunct professors, or visiting faculty of any kind should make sure these teachers are familiar with Rice grading procedures. A regular faculty member who is well-versed in the grading guidelines should be assigned to assist such instructors.

The chair of the Committee on Examinations and Standing or the vice president for student affairs will be glad to advise any faculty member faced with exceptional circumstances that may justify special consideration. Students may petition the committee concerning the application of these guidelines. Suspected or possible violations of the honor system should be submitted to the Honor Council.

Library and Computer Networks

Students seeking information for course work and independent or graduate research may visit Fondren Library at the heart of the university campus, or they may access any of a number of campus computing labs and networks.

Fondren Library

Fondren Library provides a wealth of resources for study and research. Its permanent collection numbers 1.9 million volumes, more than 2.3 million microforms, and 10,000 current periodical and serial titles, not to mention 28,000 titles on audiotape, videotape, and compact disc. The library is well equipped to meet the needs of students and faculty.

Students exploring the library's extensive holdings can take advantage of its networking systems. With Macintosh and UNIX workstations scattered throughout the first floor of the library, students looking for information have their choice of print or electronic media. Network connections reach to all floors of the library, and circulating Macintosh Powerbooks are available for students to use in the building.

If they want to postpone a trek to the library, students may use the campuswide information system, **RiceInfo**, to access the library's on-line catalog. RiceInfo also links students to a wide variety of literature indexes and a growing collection of full-text reference sources as well as primary literature.

The library staff is committed to the evolving information technologies, whether in helping to develop "electronic studios"—collections of applications and tools tailored to a particular subject or need—or in easing user access to networking systems. The library's electronic resources also include multimedia packages and large data sets, and students will find many specialized research tools available, such as computer programs for text analysis and geographic information systems software.

Fondren Library provides a home for a number of separate collections. It is a federal depository for U.S. government publications, patents, and trademarks. The Woodson Research Center holds the library's rare books, manuscripts, and university archives. The library also houses the Alice Pratt Brown Fine Arts Library. The Business Information Center is in Herring Hall.

The library has an open-shelf policy that encourages creative browsing. Students may use a host of special facilities, from individual study carrels to group-study rooms and from audiovisual equipment and electronic workstations to microform reading carrels. Photocopiers are available in the library.

Fondren Library operates on the philosophy that a library is more than a collection of books. It is, instead, an essential campus resource, with its knowledgeable staff and up-to-date technologies—an inviting place that introduces students and faculty to a range of rich possibilities as they pursue their independent inquiries.

Endowed Book Funds

These endowed book funds supplement university-budgeted funds for book acquisitions, helping to meet the instructional and research needs of faculty and students. Each of these book funds was established by gifts or bequests from alumni and friends, corporations, or foundations.

Alice Gray Sears Akin Library Endowment Fund
 Ralph A. Anderson, Jr., Memorial Fund in the Library
 Robert Cyrus Allen French and Spanish Periodicals Fund
 Henry Leigh Bartlett Fund
 George R. Brown Library Fund for Engineering
 Mr. and Mrs. Emory T. Carl Endowed Fund for Fondren Library
 Robert Foster Cherry Endowment Fund
 Raymond and Florence Cook Memorial Fund
 Cook Family Book Fund
 Billy Ed Daniels Endowed Book Fund
 Ruth Daugherty Memorial Fund
 Alice Crowell Dean Endowment of Fondren Library
 Frank M. and Betty G. Dawson Fund for Chemical Engineering
 Juanita Swope Depenbrock Fund in Fondren Library
 Marilyn Ekeroot Book Fund
 Catherine Goodrich Fay Endowed Book Fund
 Margery A. Halford Endowed Fund
 Charles W. Hamilton Fund
 Beatrice Harrison Book Fund
 Hispanic Studies Endowed Book Fund
 Pat and May Keating Library Fund
 Lucius N. Littauer Judaica Book Fund
 Charles Fred and Lillian Kimpton Jewett Library Fund
 Mary Elizabeth Johnston Endowed Book Fund
 Roderick Jones Architectural Endowment Fund
 Winifred Graham Johnston Memorial Fund for English Literature
 J. Frank Jungman Memorial Fund
 Edward Watson Kelley Memorial Fund
 Frederica Killgore Fund for Fondren Library
 Floyd Seyward Lear Bequest
 Harold M. Lacy, Jr., Endowed Book Fund
 William Alexander Kirkland Endowed Book Fund
 Friends of Fondren Library Endowment
 Henry Malcolm Lovett Book Endowment
 Andrew Louis Endowed Fund for Germanic Studies
 Rodney H. and Judy E. Margolis Library Fund
 Ted J. Montz Endowed Fund
 Alan and Lorel McKillop Endowed Book Fund
 Marjorie B. Paxson Fund
 Edward Arrants Peden Memorial Fund
 William Addison McElroy Family Endowed Fund
 George and Ann Powell Memorial Fund
 Dr. P. Quillian Library Endowment Fund
 Anne L. and Frederick D. Rossini Library Fund
 Elizabeth Goodson Rodell Memorial Fund
 Peggy Shiffick Collection for Environmental Studies

Society of Rice University Women's Fondren Library Endowment
 Pender Turnbull Woodson Research Center Endowment
 Peter Fondren Underwood Fund
 Waggaman Sisters Fund
 David McNeill Whightsel Endowed Fund for Humanities
 Willoughby C. Williams Library Endowment Fund
 Owen Wister Literary Society (O.W.L.S.) Library Endowment
 John H. Wright Endowment for Bibliography Research in Fondren Library

Owlnet Computing Labs

Owlnet consists of the computing resources for undergraduate educational use by members of the Rice community. Information Technology manages these resources, including the campus labs, software applications, campus network, and dial-up services. Owlnet is comprised of three platforms: UNIX workstations and Macintosh and PC microcomputers.

Owlnet Computing Labs are scattered across the campus including one in each residential college. For a complete listing of labs, check our Web site <http://riceinfo.rice.edu/Computer> or pick up a brochure on labs outside 103 Mudd Lab. Some of the larger labs are:

- Fondren Library (first floor)
- Mudd Lab (first floor)
- Rice Advanced Visualization Lab (Anderson 218)
- Ryon Lab (102)
- Social Science Computing Lab (Sewall 101)

For Further Information. If you need more information about available computing resources or wish to apply for an account, our Web page is a great starting point <http://riceinfo.rice.edu/Computer>. If you need some help or wish to ask a question, contact our Consulting Center (103 Mudd Lab, (713) 527-4983, consult@rice.edu). Our consulting staff can get you started and guide you to additional resources.

Student Health and Counseling Services

By paying an annual student health service fee, all students gain access to both the Student Health Service and the Rice Counseling Center. Detailed information on the care and services each provide is available from both clinics.

Student Health Service

This outpatient primary care clinic in the north wing of Hanszen College is staffed by two physicians and two nurses. Clinic hours are from 8:00 A.M. to 5:00 P.M., Monday through Friday, during fall and spring semesters. For after-hours and weekend medical care, students may choose among a number of local hospitals. Students must pay for all medical care outside the clinic's purview, including blood tests, x-rays, and outside physician consultations. Should such medical care be necessary, students are urged to review their insurance coverage and pick the best available option.

In serious emergencies, students should call the Student Health Service (extension 4966 during work hours) or the Campus Police (extension 6000).

The clinic is open full time from the first day of Orientation Week until the day before commencement. It is closed during the Christmas break and the Thanksgiving

12 GENERAL INFORMATION FOR ALL STUDENTS

and Easter weekends, but it remains open in the mornings during midterm breaks.

The Student Health Service provides the following:

- Primary care for illness and injury with referrals to specialists when needed
- Maintenance of health records for all students
- Immunizations
- Contraceptive counseling and routine Pap smears
- Allergy shots (students must provide serum after a specialist allergy workup)
- Physical examinations (e.g., for employment, transfer to another school, or scholarship expeditions)

Health Insurance. All Rice students must have health insurance. Students may purchase insurance through the university at two levels of coverage, as described in a brochure sent to incoming and returning students each summer; dependent coverage is also available. For additional brochures and applications, students should contact the Cashier's Office, Student Health Services, or the Rice Counseling Center. Rice's group coverage for the 1997-98 school year is effective from 12:01 A.M., August 15, 1997, until 12:01 A.M., August 15, 1998.

Students who have other medical insurance should sign a waiver card showing proof of insurance and return it to the Cashier's Office by August 15, before classes begin, to avoid automatic billing for coverage.

Confidentiality. The Student Health Service physician-patient relationship is a confidential one, and medical records will not be released except as required by law, or when the patient poses a significant risk to herself or himself or another person.

Rice Counseling Center

Rice Counseling Center, in 301 Lovett Hall, addresses students' psychological needs with various programs and services. The center is open year-round except for scheduled holidays and occasional all-day staff retreats. Office hours for counseling and consultations are 8:30 A.M. to noon and 1:00 P.M. to 5:00 P.M., Monday through Friday. Students can make appointments by calling (713) 527-4867 or by coming by the center.

Typically, most students who use the counseling services bring with them very common concerns: roommate problems, breakup of a relationship, academic and/or interpersonal anxiety, family problems, difficulties adjusting to Rice, or confusion about personal goals, values, and identity. Counselors are equipped to handle a variety of issues, from substance abuse, eating disorders, and sexual assault/abuse to date violence, depression, and the coming-out process. Rice Counseling Center offers both individual and group counseling as well as workshops and programs.

When students clearly need prolonged or specialized counseling or treatment, counselors refer them to an outside provider. The students, or their health insurance, must pick up those costs. All students who have paid the Health Service Fee are eligible for initial assessment sessions, consultations, crisis intervention, and educational programming. Individual or group counseling may also be available if appropriate.

The Rice Counseling Center provides the following services:

- Initial assessment
- Short-term individual and couples counseling
- Group therapy and support groups (e.g., for eating disorders, relationship issues, survivors of sexual abuse, or gay and lesbian issues)
- Medication consultations with the center's consulting psychiatrist
- Other consultations (e.g., on how to make a referral or how to respond to a friend in distress)

- Educational programming (e.g., various presentations on mental health issues)
- Crisis intervention on a walk-in emergency basis during regular office hours; students may call (713) 527-4867 for assistance with emergencies after hours or on weekends

College Assistance Peer Program (CAPP). In this peer counseling program, students who have been carefully selected and trained in listening skills and mental-health education serve as supportive listeners and referral sources for other students. They also assist the center with its educational programming.

Students with Disabilities. Because students who have physical limitations may find it difficult to reach the Rice Counseling Center's third-floor location in Lovett Hall, staff will arrange to see those students in a more accessible location on campus. Students should call the center to make these arrangements.

Confidentiality. Counseling services are confidential: information about a student is not released without that student's written permission. By state law, confidentiality does not extend to circumstances where (1) there is risk of imminent harm to the student or others; (2) the counselor has reason to believe that a child or an elderly or handicapped person is, or is in danger of, being abused or neglected; (3) a court order is issued to release information; (4) the student is involved in a criminal lawsuit; or (5) the counselor suspects that the student has been the victim of sexual exploitation by a former health provider during the course of treatment.

Student Resource Centers

Rice Memorial Center/Ley Student Center

The Rice Memorial Center/Ley Student Center provides a base for a range of student-centered activities. It is also an informal place where students, faculty, and staff can congregate. Individuals meet over casual meals at Sammy's Cafeteria and drinks at the Coffeehouse and Willy's Pub, while others browse through the Rice Campus Store. Farther into the group of buildings, students find an array of offices, programs, and resource centers, including the Career Services Center, the Community Involvement Center, the Office of Academic Advising, the Rice Program Council, and the assorted student, international student, and graduate student associations. The campus radio station KTRU has offices there, as do the *Thresher* (the campus newspaper) and the *Campanile* (the yearbook). The Rice Memorial Chapel anchors one end of the two-center complex, which also houses the Association of Rice Alumni. On any given evening, the larger rooms may be busy with meetings or catered dinners, and members of the Rice community regularly tap the facilities for special events, from parties and concerts to weddings.

Career Services Center

The Career Services Center is open to everyone in the university community. Undergraduates unable to decide on a major, career, or graduate program, or those who lack direction in the path they have chosen, may benefit from career counseling; testing is also available for those interested in a more analytical approach. Peer counselors assist both undergraduate and graduate students with résumé or vita writing, interviewing, and job search strategies.

The center sponsors workshops, career panels, and various career fairs each year. Students will find details on individual events publicized throughout the campus and in *Career News*, a center newsletter. The Career Library also has a substantial collection

of resources, including literature on a broad range of occupations, material on locating and securing employment, and information on summer jobs, individual companies, and graduate schools.

Representatives from business, industry, and other institutions visit the center each year, seeking both summer workers and full-time employees. Any interested student may schedule interviews with these representatives. Students looking for full-time, part-time, or summer jobs should also check out the listings in the Career Library.

Undergraduate liberal arts majors seeking to parlay their B.A. degrees into a business career may want to consider the Rice Joint Venture Program, which is sponsored by the Career Services Center. Students accepted into the program undertake internships with Houston-area businesses during one semester.

Office of Multicultural Affairs

Located in the cloisters of the Rice Memorial Center, the Office of Multicultural Affairs responds to the academic and social needs of ethnic minority students at Rice. Primarily providing counseling and support, the office maintains its own library of information on graduate schools, jobs, fellowships, internships, and other opportunities available to minority students once they leave Rice. The office encourages cross-cultural programming on campus and attempts to promote a general awareness of issues related to cultural diversity. The Office of Multicultural Affairs is central to the university's continuing efforts to recruit and retain more minority students.

Health Education Office

Also lodged in the cloisters of the Rice Memorial Center, the Health Education Office runs programs on such issues as sexual health awareness, substance abuse prevention, nutrition and diet, and acquaintance rape. The office also provides students with private consultations and a resource room containing health-related literature, including brochures, journals, and posters. Student volunteers with the Health Education Office participate in such groups as Students Organized Against Rape (SOAR) and serve as health representatives for their colleges.

Sports

Intercollegiate Athletics

Rice is a new member of the Western Athletic Conference and a Division I-A member of the National Collegiate Athletic Association. The university fields teams for men in football, basketball, baseball, swimming, tennis, golf, and cross-country, indoor, and outdoor track. Women team sports include basketball, volleyball, swimming, tennis, and cross-country, indoor, and outdoor track. Home football games are played in the beautiful 70,000-seat Rice Stadium. The rest of the university's extensive athletic facilities include Autry Court for basketball and volleyball, Cameron Field for baseball, the Jake Hess Tennis Stadium, and the Rice Track Stadium. Encouraging its student athletes to pursue high goals, Rice prides itself on its dual goal of excellence in both academics and athletics; the rigors of one may not serve as an excuse for less than high quality performance in the other.

Intramural Sports

The Department of Human Performance and Health Sciences offers a supervised program of intramural sports for all students, faculty, and staff. Anyone may participate in individual, dual, or team sports; swim meets; and track and field events. Interested students, faculty, and staff may also form teams to compete in the wide variety of tournaments available. While all students may take part in the university intramural tournaments, undergraduates may also represent their respective colleges in the college team sports tournaments that follow intramural play. In the past few years, Rice has seen more than 6,000 entries in 53 tournaments. Students are forewarned, though, that they participate at their own risk.

Sports Clubs

In addition to the intramural program, the Department of Human Performance and Health Sciences administers a sports club program. A sports club is a special interest group organized by students who want to play, and promote interest in, a particular sport. Club organization depends on student interest. In recent years, clubs have included badminton, cricket, cycling, dance, fencing, field hockey, frisbee, lacrosse, martial arts, rowing, rugby, sailing, shooting, soccer, softball, and volleyball. Students join these groups to increase both individual and team skills through a dual program of instruction and competition. They support the clubs with individual contributions, membership dues, solicitation of university funds, and various fund-raising activities. Again, students participate in the different sports at their own risk.

Student Automobiles

All students must register their vehicles with the Traffic Division of the Campus Police. Students must park in assigned areas and observe university regulations. Illegally parked or unregistered vehicles are subject to towing and/or fines by the university. Copies of *University Traffic and Parking Regulations*, a publication giving a detailed account of student privileges and responsibilities, are available from the Traffic Division. Students must inform all guests of parking regulations; vehicles belonging to visitors who repeatedly violate these rules also may be towed or booted.

*Information for
Undergraduate
Students*



Introduction

The undergraduate experience at Rice is one of intense and intimate interaction. The close sense of community created by individual placement in residential colleges is extended to warm personal relationships with members of the Rice faculty. In its seclusion “behind the hedges,” the beautifully ordered, spacious campus is small enough to encourage a sense of belonging even as students engage with the lively cultural currents of one of the country’s largest cities.

The academic philosophy at Rice is to offer students beginning their college studies both a grounding in the broad fields of general knowledge and the chance to concentrate on very specific academic and research interests. By completing the required distribution courses, all students gain an understanding of the literature, arts, and philosophy essential to any civilization, a broad historical introduction to thought about human society, and a basic familiarity with the scientific principles underlying physics, chemistry, and mathematics. Building on this firm foundation, students then concentrate on studies in their major areas of interest.

Rice grants the two undergraduate degrees, the Bachelor of Arts (B.A.) and the Bachelor of Science (B.S.), in a range of majors. The vast majority of undergraduates earn the B.A. degree, though students may elect to pursue the B.S. degree, offered at Rice in various fields of engineering, which is accredited by the Accreditation Board for Engineering and Technology (ABET). Undergraduates may major in any of the numerous fields provided by the various schools of architecture, humanities, music, social sciences, science, and engineering. To accommodate the full range of individual student interests, specific interdepartmental majors are also available, as are selectively approved area majors. In certain departments, students also have the option of overlapping the upper-level course work of their undergraduate degree with those basic requirements necessary to earn a higher degree in the field, considerably reducing the time required to complete their graduate studies. The Shepherd School of Music offers a joint degree in music (B.Mus./M.Mus) that may be completed with a fifth year of study.

Through Rice’s Department of Education, students interested in teaching in secondary schools may complete a program of teacher training, leading to certification in the state of Texas, together with the B.A. degree. Programs that satisfy the requirements for admission to medical, dental, or law school are also available in conjunction with the various majors.

Graduation Requirements

Basic Degree Requirements

All students must complete the following:

- 12 semester hours of approved courses in each of the three distribution groups (for information on distribution requirements, see pages 19-20)
- An English competency requirement
- 2 courses in health and physical education

To satisfy the **English competency requirement**, students must pass an English composition examination given to all entering students during Orientation Week. Those failing to pass must successfully complete ENGL 103 *Basic Composition*, a one-semester course carrying degree and distribution credit. The **health and physical education** courses include a range of offerings. Although two courses are required, they do not count toward the total semester hours at graduation. Students with disabilities may make special arrangements to satisfy this requirement.

All Bachelor's Degrees

The following conditions concerning attendance at Rice, course level, and grade point average apply for any bachelor's degree. All students must:

- Be registered at Rice for at least four full fall and/or spring semesters
- Complete at least 60 semester hours at Rice
- Take at least 48 hours of all *degree* course work in upper-level courses (at the 300 level or higher)
- Complete more than half of the upper-level courses in *degree* work at Rice
- Complete more than half of the upper-level courses in their *major* at Rice (certain departments may specify a higher proportion)
- Complete all Rice courses satisfying *degree* requirements with a grade point average of at least 1.67
- Complete all Rice courses satisfying *major* requirements with a grade point average of at least 2.00

Before taking elective courses, students are responsible for making sure their plan of study meets all degree and major deadlines and requirements.

Bachelor of Arts

The specific requirements of individual majors leading to the Bachelor of Arts degree vary widely. As a rule, however, majors leading to the B.A. at Rice are designed to fit the following parameters. To qualify for the B.A.:

- All students must complete at least 120 hours of coursework
- Students in the humanities and social sciences must complete between 18 and 80 hours in coursework within the major (including required courses, prerequisites, and related laboratories)
- Students in the sciences must complete between 24 and 80 hours in coursework within the major (including required courses, prerequisites, and related laboratories)
- Students in all fields except architecture must complete at least 60 hours in coursework outside the major, and
- Students in architecture must complete at least 38 hours in coursework outside the major

Bachelor of Science

The B.S. degree in a given engineering field is distinct from the B.A. degree in that it must meet the greater technical requirements demanded by ABET accreditation. To earn a B.S. degree, students must meet the following minimum semester hour requirements in successful course work:

- **All majors except chemical engineering**—a total of at least 134 hours
- **Chemical engineering majors**—up to 137 hours, depending on ABET requirements

Special Bachelor's Degrees

The professional Bachelor of Architecture (B.Arch.) degree requires a fifth year of study and a one-year preceptorship. The Bachelor of Music (B.Mus.) degree requires advanced courses in aural skills in addition to the core music curriculum.

Distribution Requirements

Distribution Groups

Undergraduates must complete at least 12 semester hours in each of the three groups listed as follows:

- Group I** *Humanities*—literature and language, art and art history, classics, philosophy (except logic), religion, music, and humanities
- Group II** *Social Sciences*—economics, history, political science, anthropology, linguistics, psychology, and sociology
- Group III** *Natural Sciences/Engineering*—biological science, physical science, engineering, mathematics, mathematical sciences, logic, statistics, and computer science

Foundation Courses

Foundation courses provide an introduction to different genres of the humanities and the arts by studying representative works (Group I), to the fundamentals underlying the study of human society (Group II), and to the principles of modern scientific thought and practice (Group III). Students complete specific groups of foundation courses according to their major.

Classifications by Major

Undergraduate majors in the humanities are classified as Group I, majors in the social sciences as Group II, and majors in engineering and the natural sciences as Group III. Music, architecture, and cognitive sciences majors must meet unique requirements. Interdisciplinary majors other than cognitive sciences have been assigned for convenience to one of the three groups.

A complete listing by distribution group follows:

Humanities Majors (Group I)

Ancient Mediterranean Civilizations	Hispanic and Classical Studies
Art and Art History	Human Performance/Health Sciences
Asian Studies	Medieval Studies
Classics	Philosophy
English	Religious Studies
French Studies	Study of Women and Gender
German and Slavic Studies (includes Russian)	

Social Sciences Majors (Group II)

Anthropology	Mathematical Economic Analysis
Economics	Policy Studies
History	Political Science
Linguistics	Psychology
Managerial Studies	Sociology

Natural Sciences Majors (Group III)

Biochemistry	Geology
Biology	Geophysics
Chemical Physics	Mathematics
Chemistry	Physics

Engineering Majors (Group III)

Chemical Engineering	Environmental Science and Engineering
Civil Engineering	Mechanical Engineering and Materials
Computational and Applied Mathematics	Science and Engineering
Computer Science	Statistics
Electrical and Computer Engineering	

Foundation Course Requirements by Major

Students must complete specific foundation courses according to which distribution group includes their major (area majors are assigned to one of the three groups when they are approved).

Double Majors. Double majors who combine a Group I/II discipline with a Group III discipline do not need to take any foundation courses. Double majors in music and another discipline must meet the requirements of the distribution group that includes the other discipline. Similarly, double majors in architecture and another discipline must meet the requirements of the distribution group that includes the other discipline; students should be aware, however, that the architecture major still requires the completion of specific foundation courses.

Requirements. A list of requirements by group follows:

Group I majors—6 hours of Natural Sciences Foundation Courses

Group II majors—6 hours of Natural Sciences Foundation Courses

Group III majors—6 hours of Humanities Foundation Courses and 3 hours of Social Sciences Foundation Courses

Architecture majors—6 hours of Humanities Foundation Courses, 3 hours of Social Sciences Foundation Courses, and 6 hours of Natural Sciences Foundation Courses

Cognitive sciences majors—6 hours of Humanities Foundation Courses (double majors are not required to take any foundation courses)

Music majors—6 hours of Humanities Foundation Courses, 3 hours of Social Sciences Foundation Courses, and 6 hours of Natural Sciences Foundation Courses

Full Distribution Requirements

In addition to the foundation courses appropriate to their major, students must complete the distribution requirements in each subject group by taking other courses that appear on the list of approved courses in effect at the time of course registration. A complete list is published annually in the *Schedule of Courses Offered*. Copies are also available in the Registrar's Office and in the Office of Academic Advising. Courses that satisfy distribution requirements are identified individually in the listings in the Courses of Instruction section.

Undergraduate Majors

Students usually decide on a major by the end of their sophomore year, if not sooner. Majors Day, held each spring, brings together representatives of all departments and preprofessional offices to answer questions and provide students with information about their programs. Within the traditional departmental majors, students sometimes have the choice of a particular **area of concentration**, as is the case in electrical engineering, German, and economics. Students also may opt for **double or triple majors**, where they fulfill the major requirements of two or three different departments; such majors do not necessarily need to be in related fields. More detailed information on the departmental majors briefly described below may be found in the Departments and Interdisciplinary Programs section and by contacting the department chairs or faculty advisers.

Departmental Majors

School of Architecture. Students interested in architecture may choose between the four-year B.A. program or the six-year Bachelor of Architecture (B.Arch.) degree. Students completing the four-year B.A. who have been admitted to the B.Arch. program during their senior year spend a fifth year in a working preceptorship with an architectural firm, returning to Rice to complete a final year of architectural study for the degree.

George R. Brown School of Engineering. Rice offers, through eight departments, majors in chemical engineering, civil engineering, computational and applied mathematics, computer science, electrical and computer engineering, mechanical engineering, materials science and engineering, and statistics. Students may elect a double major by combining environmental science with another science or engineering field. These programs lead to either the B.A. or the B.S. degree and may qualify students for further graduate study.

School of Humanities. Students may declare majors in art and art history, classics, English, French studies, German, and Slavic studies (includes Russian), Hispanic studies, human performance and health sciences, history, linguistics, philosophy, and religious studies. Interdisciplinary majors are available in ancient Mediterranean civilizations, Asian studies, medieval studies, and the study of women and gender, while an interdepartmental major in policy studies combines courses from the School of Humanities and the School of Social Sciences.

Shepherd School of Music. Music students may opt for either a B.A. or a Bachelor of Music (B.Mus.) degree in performance, composition, music history, and music theory. Students who pass the qualifying examination may elect an honors program that leads to the simultaneous awarding of the B.Mus. and Master of Music (M.Mus.) degrees after five years of study, the final two years of which are devoted to the student's particular specialization.

Wiess School of Natural Sciences. All natural science departments, including biochemistry and cell biology, chemistry, ecology and evolutionary biology, geology and geophysics, mathematics, physics, and space physics and astronomy, with the single exception of the last, offer programs leading to the B.A. degree. Majors include biochemistry, biology, chemical physics, chemistry, geology, geophysics, mathematics, and physics. Students may also elect double majors combining one of the programs in natural sciences with another science, a humanities discipline, or an engineering field.

School of Social Sciences. Rice offers majors in anthropology, economics, mathematical economic analysis, political science, psychology, and sociology. Both the interdepartmental policy studies major and the cognitive studies major include engineering and humanities courses, while the managerial studies major incorporates course work in the Schools of Engineering and Administration.

Area Majors

Should the traditional departmental majors or programs not meet their exact needs, students may develop an area major closer to their particular interests and career goals. Area majors differ from double majors in that the latter must conform to the requirements of both departments while the former is a single major: it may combine courses from two or more departments, but it maintains its own specific major requirements. Area majors are limited by the available academic resources and must be distinct from other majors offered at Rice. Students who elect to declare an area major may not use it to form a double major, and they must still meet all the other university graduation requirements. See also "Area Majors" under Declaring Departmental Majors (page 33).

Interdepartmental Majors

Interdepartmental majors combine courses taught by faculty from more than one department; they are listed separately in the Undergraduate Degree Chart (pages 25-26).

Other Academic Undergraduate Options

Rice/Baylor College of Medicine Medical Scholars Program

The Medical Scholars Program is for talented and motivated students who are scientifically competent, socially conscious, and capable of applying insight from the liberal arts and other disciplines to the study of modern medical science. Up to 15 graduating high school seniors are admitted to Rice and Baylor College of Medicine concurrently: the traditional four years at Rice are followed by four years at Baylor. Applications for the program are sent to those who indicate their interest on their Rice application. Students, however, must have applied under the Early Decision or Interim Decision plans (see page 45). Interviews are scheduled in late March, and decisions are made in April. Early decision applicants must have Rice as their first-choice school, regardless of the Baylor decision to be made later in the spring. Applicants not admitted to the Medical Scholars Program are still eligible for admission to Rice and may still apply to Baylor upon graduation from Rice.

W. M. Keck Center for Computational Biology Research Training Program

Undergraduates may take advantage of research training opportunities in computational biology offered by this joint project of Rice, Baylor College of Medicine, and the University of Houston. Students in biophysics, cell biology, evolutionary biology, computer science, statistics, mathematics, physics, chemistry, computational and applied mathematics, and engineering may apply for a summer program that provides "hands-on" research under faculty mentorship in lab settings, seminars and workshops, and access to the advanced computational and analytical resources offered by the center.

Premedical, Prelaw, and Prebusiness Programs

In addition to the preprofessional and professional programs offered by Rice in architecture, business administration, engineering, and music, students may pursue programs that satisfy the admission requirements for graduate schools in business, dentistry, diplomacy and foreign affairs, health science, law, and medicine. Interested students may contact various advisers with offices in the Ley Student Center, including health professions advisers for premedical or predental studies and other professional programs in the health sciences, a prelaw adviser for prelegal studies, and a prebusiness adviser for business, finance, and accounting.

Junior Year Admission. Students who plan to enter medical school or any other professional or graduate school at the end of their junior year at Rice can arrange to receive a Rice four-year bachelor's degree by submitting to the Committee on Examinations and Standing a degree plan that fulfills all normal university and departmental requirements for the bachelor's degree. Students *must* submit a degree plan before they begin graduate or professional training. The Committee on Examinations and Standing then reviews the degree plan submitted by each student and gives final approval.

Students who want to take advantage of this junior year admission may apply no more than 30 to 40 semester hours (10 courses) in transfer credit (courses must be acceptable to the student's major department and the registrar).

Premedical and Predental Programs. The entrance requirements for U.S. medical and dental schools are simple: one year each of general chemistry, organic chemistry, physics, mathematics, biology, and English, plus laboratories required by the science courses. Because medical and dental schools seldom favor any one area of study, students may choose their major according to their interests and capabilities. The degree plan should provide them with both a broad cultural background and the necessary skills for an alternative career. Science or engineering majors will automatically satisfy most of the entrance requirements for medical or dental school, but students majoring in the humanities will need to make some adjustments in their study plan. Premedical and predental students should discuss their degree plans with the health professions advisers.

Prelaw Program. All degree programs offered at Rice satisfy the academic requirements for admission to law school. While many prelaw students major in history, political science, or economics, no law school specifies particular courses or curricula as prerequisites to admission. Most require only a baccalaureate degree and the Law School Admission Test. Students selecting a major should simply keep in mind the provision in *The Official Guide to U.S. Law Schools* (published by the Law School Admission Council/Law School Admission Services in cooperation with the American Bar Association and the Association of American Law Schools) that prelegal education should develop oral and written comprehension and expression, as well as creative thinking and critical understanding of human values. While no one discipline is paramount, the prelaw adviser usually recommends that students take expository writing courses and beginning accounting and economics courses. Interested students should contact the prelaw adviser early, preferably in their first year at Rice. The guide to law schools cited above, reference books, and the catalogs of many leading law schools are available in the prelaw office in the Office of Academic Advising, Ley Student Center.

Prebusiness Program. Business schools consider the following when admitting students to their Master of Business Administration (M.B.A.) programs:

- Scholastic aptitude, as evidenced by undergraduate grades and performance on the Graduate Management Admission Test (GMAT)
- Extracurricular activities
- Work experience
- Effective oral and written communication

While no one undergraduate major is preferred, students should select a major (or majors) where their academic performance is likely to be the strongest. The prebusiness adviser recommends that students take ECON 211 and 212 *Principles of Economics I and II* and ACCO 305 *Introduction to Accounting* as courses helpful for graduating seniors seeking employment in the private or public sector (most schools prefer students with relevant full-time work experience). Calculus has become increasingly important to business schools as well.

Interested students should consult the prebusiness adviser early in their undergraduate years. Because business schools differ in their objectives, curricula, teaching methods, job placement possibilities, and admission standards, students should be familiar with the programs of different schools before applying. The prebusiness adviser can also suggest the kinds of work experience that schools typically prefer.

Reserve Officers' Training Corps (ROTC) Programs

Rice hosts a Naval ROTC program, and students may participate in Army ROTC through a cross-enrollment program with the University of Houston. These programs train select college students who upon graduation receive reserve commissions as officers in the United States Army, Navy, or Marine Corps.

Most students enroll in the ROTC programs at Rice at the beginning of the fall term. While courses in naval science and military science are open to any student, they count as free electives and cannot satisfy a student's distribution requirements or departmental major requirements. The provost determines the credit assigned to each course in consultation with the Committee on the Undergraduate Curriculum. Performance in ROTC courses, however, weighs in the determination of probation, suspension, course load, and grade point average. Students suspended by the university for academic failure or other reasons are immediately discharged from the ROTC programs, as are students producing unsatisfactory course work and those lacking sufficient officer-like qualities regardless of their academic performance.

For additional information on the ROTC programs and available scholarships, see both military science and naval science in the Departments and Interdisciplinary Programs and Courses of Instruction sections.

UNDERGRADUATE DEGREE CHART

School Department	Undergraduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
JESSE H. JONES GRADUATE SCHOOL OF ADMINISTRATION		
	No undergraduate degree offered	Three accounting courses open to all undergraduates
SCHOOL OF ARCHITECTURE		
	B.A., B.Arch.	B.A. majors in architecture and in architectural studies
GEORGE R. BROWN SCHOOL OF ENGINEERING		
Chemical Engineering	B.A., B.S.	Specific B.A. for double majors in chemical engineering and biochemistry; specific B.S. for double majors in chemical engineering and environmental engineering
Civil Engineering	B.A., B.S.C.E.	Option in environmental engineering
Computational and Applied Mathematics	B.A.	Areas of concentration in computational science, numerical analysis, operations research/optimization, physical mathematics, and applied probability
Computer Science	B.A.	
Electrical and Computer Engineering	B.A., B.S.	Areas of concentration in systems, computer engineering, and physical electronics
Environmental Science and Engineering	B.A.	B.A. only as double major with other science or engineering major; see also civil engineering and chemical engineering
Mechanical Engineering and Materials Science	B.A., B.S.M.E., B.S.M.S.	Majors in mechanical engineering and materials science and engineering
Statistics	B.A.	Theoretical and applied training orientations; joint work in related departments
SCHOOL OF HUMANITIES		
Art and Art History	B.A., B.F.A.	Tracks in history of art and studio art; special fifth-year courses for B.F.A. candidates
Education	No undergraduate degree offered	Leads to secondary teaching certificate in conjunction with B.A. in major field
English	B.A.	
French Studies	B.A.	
German and Slavic Studies	B.A.	German and German cultural studies, and Russian/Slavic studies
Hispanic and Classical Studies	B.A.	Spanish language and literature, Latin American studies, classics, Greek, Latin, and Portuguese
History	B.A.	
Human Performance and Health Sciences	B.A.	Areas of concentration in exercise science, sports medicine, sports management, health sciences, and teaching/coaching
Linguistics	B.A.	Areas of concentration in language, cognitive science, second language acquisition, and language, culture, and society
Philosophy	B.A.	
Religious Studies	B.A.	Distribution requirements in methodology and religious traditions

School Department	Undergraduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
SHEPHERD SCHOOL OF MUSIC		
	B.A., B.Mus.	B.A. in music; B.Mus. in composition, music history, music theory, and performance; joint B.Mus./M.Mus. with fifth year of study
WIESS SCHOOL OF NATURAL SCIENCES		
Biochemistry and Cell Biology	B.A.	Part of an integrated biosciences curriculum
Ecology and Evolutionary Biology	B.A.	Part of an integrated biosciences curriculum
Chemistry	B.A.	Chemical physics major offered jointly with physics
Geology and Geophysics	B.A.	Majors in geology and in geophysics
Mathematics	B.A.	Differential geometry, ergodic theory, partial differential equations, probability, real analysis, mathematical physics, complex variables, and geometric and algebraic topology
Physics	B.A.	Major in physics with specific options in applied physics, biophysics, and space physics and astronomy; interdepartmental major in chemical physics
Space Physics and Astronomy	B.A.	See physics
SCHOOL OF SOCIAL SCIENCES		
Anthropology	B.A.	Areas of concentration in archaeology and social/cultural anthropology
Economics	B.A.	Majors in economics and in mathematical economic analysis
Political Science	B.A.	
Psychology	B.A.	
Sociology	B.A.	
INTERDEPARTMENTAL MAJORS		
Area Majors	B.A.	Two or more departments and the Office of Academic Advising
Ancient Mediterranean Civilizations	B.A.	Anthropology, classical studies, Greek, Latin, history, history of art, linguistics, philosophy, and religious studies
Asian Studies	B.A.	Anthropology, art, history of art, history, humanities, linguistics, Chinese, Japanese, Korean, Sanskrit, political science, and religious studies
Cognitive Sciences	B.A.	Anthropology, cognitive sciences, computer science, electrical engineering, linguistics, philosophy, psychology, sociology, and statistics
Managerial Studies	B.A.	Accounting, computer science, computational and applied mathematics, economics, environmental sciences and engineering, political science, psychology, and statistics
Medieval Studies	B.A.	History of art, classics, English, French, German, history, humanities, linguistics, Spanish, music, philosophy, political science, and religious studies
Policy Studies	B.A.	Anthropology, economics, history, computational and applied mathematics, philosophy, political science, psychology, sociology, and statistics
Study of Women and Gender	B.A.	Anthropology, classics, English, French studies, German, history, humanities, linguistics, music, philosophy, religious studies, and sociology

Teacher Certification

Students in the teacher education program earn Texas state teacher certification at the secondary level. Subjects include art, biology, chemistry, computer science, earth science, economics, English, French, general science, geology, German, health sciences, history, Latin, life-earth science, mathematical sciences, physical education, physical sciences, physics, political science, psychology, Russian, social studies, sociology, and Spanish. For more information on teacher certification programs, see Education in the Departments and Interdisciplinary Programs and Courses of Instruction sections.

Foreign Study and Exchange Programs

Each year more than 100 undergraduates from many different majors study away from campus, applying the transfer credit earned toward their degrees. The director of international education and faculty advisers in each department help these students select their programs and arrange for credit transfers (Rice follows the same general guidelines when transferring credit from both foreign and domestic universities). Students entering a foreign study or exchange program should arrange prior approval for transfer credit through the relevant academic department(s) and the registrar. While most students participate in a Rice-based program or in one of the affiliated programs listed below, a range of other options is available. Detailed information on all programs, including application forms, is available from the Office of Academic Advising (Ley Student Center) and from the Office of International Services (Ley Student Center). Students should address requests to the director in advance both for leave to study abroad and permission to return when their studies are complete .

American University Washington Semester Program. Students majoring in policy studies may participate in American University's Washington Semester Program, which consists of a full semester's course work at American University and an internship that exposes its participants to the operation of different branches of the federal government. American University, located in Washington, D.C., offers separate programs in American politics, U.S. foreign policy, journalism, economic policy, justice, public law, and peace and conflict resolution. Students interested in the program should contact Professor Donald Ostdiek in the political science department.

Butler University Institute for Study Abroad. Rice's affiliation with Butler University Institute for Study Abroad enables students to enroll directly at 30 universities in England and Scotland and 18 universities in Australia and New Zealand. Students may stay for the full academic year or for one or two terms. The universities in Great Britain include a wide array of schools both in and outside of London, as well as major universities in Ireland; schools in Australia and New Zealand include the universities of Melbourne, Sydney, and Auckland.

Beaver College Center for Education Abroad. The affiliation with Beaver College Center for Education Abroad provides Rice students with direct access to 40 United Kingdom universities, among them various branches of the University of London, University of Bristol, University of Edinburgh, and Trinity University, Dublin. Beaver College also maintains centers in Australia, Austria, Greece, Hungary, and Mexico. A broad selection of courses of study is available.

Institute of European Studies/Institute for Asian Studies. Rice is an affiliate university of the Institute of European Studies/Institute for Asian Studies (IES/IAS), a system of centers in Berlin, Buenos Aires, Durham, Freiburg, London, Madrid, Milan, Nantes, Paris, Salamanca, Vienna, Adelaide, Canberra, Beijing, Tokyo, and Nagoya. In most cases, the institute centers are associated with a host university; students may take courses offered by both the center and the university. Counselors and faculty from IES/IAS and the host university help students select courses, facilitate registration, arrange for university examinations, and provide transcripts to Rice.

Intercollegiate Center for Classical Studies in Rome. This Rice-affiliated center in Rome focuses on classical studies. Operated through Duke University, this semester-long program offers undergraduate courses taught by European and American professors in Greek and Latin literature, ancient history and archaeology, and ancient art. This program is particularly suited to majors in ancient Mediterranean civilizations, although juniors or seniors majoring in art history or classics would benefit as well.

China Cooperative Language and Study Programs Consortium. Under the auspices of the Council on International Education Exchange, Rice participates in a consortium that offers students the opportunity to study at Peking University and Nanjing University in China and at National Chengchi University in Taipei. Prospective participants should consult with faculty teaching in the Asian studies major.

C. D. Broad Exchange Program with Trinity College, Cambridge. This exchange program sponsored by the Student Aid Foundation Enterprises involves both students and faculty, linking Rice with Trinity College in Cambridge. Students compete for the chance to undertake one year of study as a visiting student at Trinity College; a Trinity student comes to Rice in alternate years. The program enables similar but shorter exchanges of Rice and Trinity faculty, with the provost appointing the Rice faculty member who participates in the exchange.

Rice Fall Semester Program in Chile. The Department of Hispanic and Classical Studies offers a one-semester program each fall in conjunction with the University of Chile in Santiago. Students in good standing who are reasonably proficient in Spanish may apply. They take courses both from the Rice professor who accompanies the group (in advanced Spanish) and from the University of Chile (in a number of fields). The program often includes students from other U.S. universities. Further information is available from the department office in 103 Rayzor Hall.

Rice Summer Studio Art Program in Greece. Professor Basilios Poulos of the Department of Art and Art History makes available an intensive three-week summer session of on-site painting and drawing in Karie Village, Greece. Students earn 3 hours credit in ARTS 451/452 *Special Problems in Painting*. Program costs include tuition, room and board, art materials, and several day trips mixed in with the daily supervised painting sessions. Detailed information is available from Professor Poulos (407 Sewall Hall) or the department.

Rice University-Gakushuin University Exchange Program. Under an exchange agreement negotiated with the School of Humanities, Rice students with previous experience in the Japanese language may apply to spend either a semester or a year at Gakushuin University, a small elite university in Tokyo. While in Tokyo, students take courses in Japanese language and culture as well as courses in other disciplines if the students are sufficiently proficient in the language. Applications for this exchange are due in February of each year.

Rice University-Kyushu University Exchange Program. Japan in Today's World (JTW) is a two-semester program that enables students from select U.S. universities to study the Japanese economy, science, language, and culture at Kyushu University's Fukuoka City campus. Students at least in their sophomore year with a good academic record and strong motivation may apply. Those chosen receive a full tuition waiver from JTW. Although courses are taught in English (except for Japanese language courses) and no previous Japanese study is required, students are encouraged to take classes in Japanese and Asian studies before entering the program.

Rice University-University of Lancaster Exchange Program. Rice sophomores majoring in economics, managerial studies, sociology, or religious studies who have maintained a minimum grade point average of 2.50 qualify for an exchange program with the University of Lancaster, a notable British university in northwestern England just south of the Lake District. The Rice-Lancaster arrangement, which requires a full academic year of study, is a one-for-one exchange, with each student paying tuition, room, and board to his or her home university. Students should submit their applications early in the spring semester prior to the school year to be spent abroad; the Office of International Education selects the finalists in consultation with appropriate departments.

Rice University-University of Würzburg Exchange Program. Through an agreement between the Department of Physics and the Department of Electrical and Computer Engineering at Rice and the University of Würzburg, Germany, Rice undergraduates in these departments may participate in a yearlong exchange between the two schools. The exchange program at Würzburg includes an intensive German language course taught in Germany before the fall term. Rice students, who must have completed at least two years of college-level German or the equivalent, apply in the spring prior to the exchange. Successful applicants arrange their courses of study, usually at the fourth-year undergraduate level, on an individual basis with department advisers. Under the terms of this one-for-one exchange, each student covers tuition costs at his or her home institution for the exchange partner; other costs are the individual's responsibility.

Exchange Program with Federation of German-American Clubs. Students at Rice with a firm grounding in written and spoken German may compete for a place in the 10-month exchange program cosponsored by the Federation of German-American Clubs and Rice. Successful applicants enroll at one of 18 outstanding German universities, professional schools, or technical schools. The Federation of German-American Clubs assigns students to their respective universities, based on their priority ranking and taking into account their individual qualifications and fields of study, as well as to a host family. The federation also arranges several weekend gatherings in different parts of Germany throughout the year abroad. One or two Rice students are selected each year by the faculty of the Department of German and Slavic Studies, in cooperation with the Office of International Education, to make an even exchange with one or two German students. Rice participants pay tuition and room and board for their counterparts and are supplied with tuition and a stipend to cover room and board while in Germany. Students should submit their applications by late February.

Rice University-Swarthmore Exchange Program. An exchange program between Rice and Swarthmore College allows qualified Rice students to spend the fall semester of their sophomore, junior, or senior year on Swarthmore's wooded campus

near Philadelphia. The nondenominational coed college has academic standards similar to those at Rice. Students who enroll at Swarthmore in its normal program of four courses receive 16 semester hours of transfer credit toward their Rice degree. The exchange is on a one-for-one basis in the fall only, each student continuing to pay tuition, room, board, and fees to his or her home school. Rice students apply in January by submitting a letter of application and two supporting letters from faculty members.

Sweet Briar Junior Year in France Program. Established in 1948, the Sweet Briar Junior Year in France Program enables college students in the U.S. and Canada to spend a year studying at four universities and other institutions of higher education in Paris. While some participants are French majors, many others specialize in such areas as art and art history, comparative literature, government, history, international relations, mathematics, music, philosophy, political science, religion, and theater arts. Following a four-week orientation period in Tours, students are encouraged to experience French culture by living with families while studying in Paris.

Denmark's International Study Program. Full-year, semester, and summer programs in Copenhagen are open to Rice students through this program established under the Danish Ministry of Education and the University of Copenhagen. Academic offerings, which focus on liberal arts, biology, engineering, international business, and architecture and design, include study tours to Russia and Europe. Prior knowledge of the Danish language is not required.

Sea Education Association. Rice's affiliation with Sea Education Association enables students to spend a semester concentrating their studies on deepwater oceanography. Half the time is spent in laboratories at Woods Hole, Massachusetts, and the other half aboard a sailing vessel in the Caribbean conducting research. Another option, Maritime Semester, lets students study the development of maritime cultures and commerce in New England and Canada while sailing off the North American coast.

Academic Regulations

All undergraduate students are subject to the academic regulations of the university. Students are responsible for making certain they meet all departmental and university requirements and academic deadlines. The Committee on Examinations and Standing administers the rules described below. Under unusual circumstances, students may submit a written petition to the committee requesting special consideration. Students should address all correspondence to the committee in care of the vice president for student affairs.

Registration

Currently enrolled students preregister in March for the fall semester and in November for the spring semester. They complete registration at the beginning of each semester. Entering students complete their registration during Orientation Week before classes begin in August. To be properly registered, new students must complete, sign, and return a matriculation card. New students may not register or attend classes until they return a properly completed health data form and meet immunization and TB screening requirements. Immunizations required for admission are diphtheria/tetanus, measles, rubella, and mumps, with immunizations against hepatitis B and chicken pox recom-

mended. The Mantoux tuberculin skin test is also required. A late fee of \$25 is charged for failure to submit a fully completed health data form by the required date. Each year, the Office of the Registrar publishes the specific deadlines for the semesters of that year.

Unless students elect a special tuition plan, they must pay all tuition and fees for the fall semester by the middle of August and for the spring semester by the end of December.

Students who do not register and who fail to request from the registrar a delay of the deadline in the Academic Calendar (pages 220-222) are considered withdrawn from the university by default. To be readmitted, students must be in good standing and must pay a late registration fee as follows:

- \$15 through the third week of the semester
- \$25 in the fourth week of the semester
- \$35 after the published deadline, usually the end of the fourth week of classes.

After the fourth week of classes, students are readmitted *only* for good reason and with the approval of the Committee on Examinations and Standing or the vice president for student affairs

Drop/Add. During the first two weeks of classes, all students may change their registration without penalty fee by adding or dropping courses with appropriate adviser's approval according to the proper procedure. After two weeks, the following conditions apply:

Undergraduate students in their first semester at Rice:

- Must obtain instructor's permission and the adviser's approval to add a course between the second and the end of the fourth week of classes
- May not add courses after the fourth week of classes
- May drop courses up to the last day of classes

All other students:

- Must obtain instructor's permission and the adviser's approval to add a course between the second and the end of the fourth week of classes
- May not add courses after the fourth week of classes
- May not drop courses after the end of the tenth week of classes, except with the approval of the Committee on Examinations and Standing (a \$15 fee is assessed for courses dropped after the tenth week by non-first-semester students)

Students may not drop courses where the Honor Council has ruled a loss of credit. Students who add or drop courses after the second week but before the deadlines noted above are charged for each drop/add form submitted according to the following fee schedule:

Week 3	\$5	Week 7	\$9
Week 4	\$6	Week 8	\$10
Week 5	\$7	Week 9	\$11
Week 6	\$8	Week 10	\$12

A flat fee of \$12 will be levied for each drop form submitted by first-semester students after the tenth week of classes.

Course Load. Students at Rice normally enroll for 15 to 17 semester hours each semester. This allows them to complete the requirements for graduation in eight semesters. Students must secure permission in writing from the vice president for student affairs before filing their registrations if they want to:

- Register for more than 20 hours
- Enroll in, or drop to, fewer than 12 hours
- Register concurrently at another university

No student may receive credit for more than 20 hours in a semester, including courses taken elsewhere, without this prior written approval.

Students should also be aware that the Registrar's Office must report a student's part-time status to various groups, such as loan agencies, scholarship foundations, insurance companies, etc. It is in the student's best interest to determine if he or she will be affected in any way by part-time status.

Students may not register for more than one course at the same hour unless they receive permission from the instructors involved.

Declaring Departmental Majors

Students normally designate a major before preliminary registration for the junior year and will not be permitted to register for the fall semester of the junior year without having declared a major. To assist students with this selection, Majors Day, an event at which departments and preprofessional offices provide information about their programs at a central location, is held each spring semester. Once a student declares a major, the department or title of the major is then noted on the student's transcript and a faculty adviser in the major department is assigned. Introductory courses taken before formal designation of a major may be counted in fulfilling the major requirements.

In order to receive a bachelor's degree, a student must complete the requirements for at least one major. Students declare their major using a form provided by the registrar. The department chair or designee must sign the form acknowledging the declaration. It is expected that the department will counsel the student about the requirements that must be met and the likelihood the student will be able to meet them. If the department believes a student is not well prepared for success in its major, it may express its reservations on the form. No department or program may, however, refuse to admit an undergraduate as a major, with the exception of the School of Architecture and the Shepherd School of Music or in the case of limitations of resources. In such cases, departments must publish criteria they will use to limit the number of majors together with their major requirements.

Although students normally declare a major by the time of preregistration for the spring semester of their sophomore year, they are always free to change departmental majors in the junior or senior year. However, such a change may entail one or more additional semesters at the university. Area majors are an exception to this rule and must be declared by the fourth semester prior to graduation (see Area Majors). Students and their advisers should regularly review progress toward their degrees.

For information on the specific requirements for any departmental major, students should consult the departmental listings and seek the advice of a faculty member in the department.

Area Majors

Students are usually the ones to initiate an area major, working it out in conjunction with advisers from the Office of Academic Advising and with faculty advisers from each of the departments involved. After designing a comprehensive and substantial course of study and deciding on an appropriate title, all parties sign off on the plan. The chairs of the involved departments and the Committee on the Undergraduate Curriculum bestow final approval. At that point, the Office of Academic Advising officially certifies the approved plan to the registrar and goes on to oversee the major on behalf of the faculty advisers. Any change in the proposed requirements requires the approval of both the faculty advisers and the Committee on the Undergraduate Curriculum.

Interested students who are unsure which departments to approach should check with the Office of Academic Advising during their sophomore year. Students may not propose an area major if they are within three semesters of graduation unless the Committee on Examinations and Standing rules that exceptional circumstances warrant this action. Under no circumstances may students declare an area major in their final semester before graduation.

Second Four-Year Bachelor's Degree

Currently enrolled undergraduates, Rice graduates with a bachelor's degree, and graduates from other universities with a bachelor's degree have the option of earning a *second* four-year bachelor's degree at Rice in a different discipline. This degree must be a different bachelor's degree from the one already held; for example, the holder of a B.A. degree may pursue course work leading to the B.S. or B.Mus. degree. Rice students should note that they can apply courses they completed at Rice as Class III students to the second degree only with the approval of the major department for that degree (Class III students are students who already have college degrees and are taking courses for credit outside of a Rice degree program).

Students Already Enrolled at Rice. To earn a second four-year bachelor's degree, currently enrolled undergraduates who have not yet completed their first bachelor's degree must:

- Be accepted for the second major by the major department
- Fulfill all requirements for the second degree
- Complete at least 30 additional semester hours at Rice beyond the hours required for their first degree (these hours are applied to the second degree)

Students seeking admission to this program should apply to the registrar. The application should include a written statement identifying both proposed majors and specifying an approved course program for each. It should also contain a note from the chair or undergraduate adviser of each department involved, indicating that the proposed course program satisfies all major degree requirements.

Students with a Bachelor's Degree from Rice. Rice graduates who wish to earn a different four-year bachelor's degree must:

- Be accepted for the major by the major department
- Fulfill all requirements for the second degree
- Complete at least 30 additional semester hours at Rice beyond their first bachelor's degree (these hours are applied to the second degree)
- Attend Rice full time for at least two semesters during the fall and/or spring terms beyond their first bachelor's degree

The entire undergraduate record for these students continues cumulatively. Those seeking admission to this program should apply to the registrar. The application should include a written statement specifying the proposed major and course program for the second degree, a supporting letter from the chair of the major department, and an explanation of the student's reasons for seeking a second degree.

Students with a Bachelor's Degree from Another School. Other graduates who wish to earn a four-year bachelor's degree in a different major from Rice must:

- Be accepted for the major by the major department
- Fulfill all requirements for the second degree
- Complete at least 60 semester hours at Rice (these hours are applied to their Rice degree)
- Attend Rice full time for at least four fall and/or spring semesters

Interested students should apply for admission through the Office of Admission, following procedures and meeting criteria similar to that for transfer applicants (see page 46). A complete application file includes the \$35 application fee, official transcripts of all undergraduate and graduate work, two letters of recommendation from the most recent college attended, and standardized test scores (the SAT, SAT I, or ACT).

Financial Aid and Housing. Students seeking information about financial aid available to participants in the second degree program should contact the Office of Financial Aid. Students admitted to the second degree program may request assignment to a college, but they will have lower priority for on-campus housing than students enrolled for a first four-year bachelor's program. This means that housing will probably not be available.

Honors Programs

To enroll in the two-semester **Undergraduate Scholars Program**, students register for HONS 470-471. This program is for juniors and seniors in all disciplines who are considering graduate study and an academic career after graduation. Students in the program plan and execute independent research under the supervision of a sponsoring faculty member (they may apply for funding to cover expenses related to their projects). They meet once a week to discuss each other's work and to hear a range of presentations on life in the academy. Students may apply in the spring of each year. For more information, contact the program's faculty codirector, Scott S. Derrick, in the English Department.

Individual departments may offer undergraduates the option of **honors program** enrollment. These programs enable students to receive advanced training or to deepen their understanding of a given discipline through an intensive program of independent supervised research. Customary procedure is for students to submit a proposed project to their department's Undergraduate Committee, which helps them rework it, as needed, into a substantial but feasible proposal. Once accepted, students are assigned a faculty adviser to guide their research. The project concludes in an honors thesis, which the adviser and two readers evaluate, and an oral examination. Departments also use honors programs to formally recognize students who have shown outstanding work through their individual projects. Acceptance into a departmental honors program is at the discretion of the faculty. For specific requirements and procedures, students should contact the individual departments.

Transfer Credit

Courses taken at another college or university that are appropriate to the Rice curriculum may be approved for transfer credit toward a Rice undergraduate degree. This includes credit for summer school courses not taken at Rice. Credit is normally given for courses whose content makes them equivalent to courses that are or could be offered at Rice. Students must have taken the course at an academic institution accredited by a regional accrediting agency and must have earned a grade of C- or better (for that reason students may not transfer courses taken pass/fail or on a similar basis at other institutions).

The registrar, in conjunction with the academic departments, determines whether courses are appropriate for transfer to Rice. Individual departments may place additional restrictions on particular courses and/or institutions. No more than 14 semester hours of transfer credit taken in summer schools other than Rice may be applied to any Rice degree. Similarly, various majors and degree programs may limit the amount of transfer credit that students may apply to them.

Because of these restrictions, students are strongly advised to seek prior approval from the registrar before taking courses elsewhere. For courses in a student's major or other highly specialized courses, the registrar may require that the student secure approval from the major department. Without prior approval, students cannot be certain that credit taken at another institution will be transferred.

If approved, the equivalent Rice course is entered on the student's record *after* the registrar receives an official transcript from the other college or university. Credit is generally determined on a pro rata basis. No grade is entered, and transferred courses have no effect on a student's Rice grade point average. However, all requirements satisfied by the equivalent Rice course are satisfied by the transferred course.

Final Examinations

Most courses include final examinations, but the decision to give a final exam as a required part of the course rests with the instructor and the department. All tests and examinations are conducted under the honor system (see page 7).

Examinations are considered final examinations when they:

- Cover more than the material learned since the last test, or
- Are the only exam in the course, or
- Require comprehensive knowledge of the entire course

Such exams may be given only during the final examination period.

Final examinations are normally three hours long. When instructors, for exceptional reasons, wish to give a longer examination, they schedule it as a take-home exam; even then, they may not exceed five hours. The "due date" for all take-home finals is the end of the final examination period.

In accordance with Committee on Examinations and Standing recommendations, hour-long exams are not given in the final week of classes when instructors have scheduled a final in that course.

University-sponsored events at which student attendance is required may be scheduled in or outside of Houston during the period from Monday through Saturday during the last week of classes, so long as no more than one day of classes and one night would be spent out of Houston from the previous Sunday night through Friday afternoon. Events scheduled on Saturday may involve travel on Friday evening and on Sunday. However, no events may be scheduled on Sunday and thereafter until the conclusion of the final examination period. Exceptions may be authorized only by the Committee on Examinations and Standing.

Grades

The Pass/Fail Option. Undergraduates may register for courses on a pass/fail basis. Such students:

- May not take more than 1 course as pass/fail for each full year of residence (students studying in off-campus programs through Rice are considered to be in residence for the purpose of this rule)
- May not take more than 4 courses total as pass/fail (even if they are in a five-year degree program)
- May not take more than 14 semester hours total as pass/fail
- May register for only 1 course as pass/fail in a semester
- May not take as pass/fail those courses specifically required for the major or courses falling within the major department or major area (when students take such courses pass/fail, the registrar automatically replaces the P with the grade earned)
- Must file the proper form for a course to be taken pass/fail no later than the posted deadline, usually the end of the tenth week of classes (the Committee on Examinations and Standing rarely approves conversion to a pass/fail designation after that deadline)

Students may convert a pass/fail course to a graded course by filing the proper form with the registrar; the deadline specified for resolving a grade of “incomplete” applies here (see page 37). Because they have the option of changing to a grade designation later, students should consider registering a course as pass/fail early in the semester.

Students should be aware that while a grade of P does not affect their grade point average, an F does. Students who take a course during the Rice summer session as pass/fail should also be aware that this counts toward their allowable total of four courses.

Grade Symbols. Instructors are required to report a grade for all students (except auditors) whose names appear on the class list. They grade their students using the following conventional symbols: **A, B, C, D,** and **F.** Students successfully completing a course pass/fail receive a **P**, while students successfully completing a designated satisfactory/fail course receive an **S**; in both cases, failure to successfully complete the course is indicated by an **F.**

Satisfactory/fail courses are those that do not use traditional grading procedures. Such courses or labs are designated in the *Schedule of Courses Offered* issued each semester by the registrar. They may be counted toward the completion of a major, but while an S does not affect the grade point average, an F does.

Students may repeat courses previously failed, but the record of the first attempt (and grade) remains on the transcript, and both grades are included in grade point average calculations. If students repeat courses previously passed, credit is awarded only once unless the course description states that students may repeat it for credit. In the latter case, each grade appears on the permanent record and is included in the grade point average.

Grade Designations. Under certain circumstances, special designations accompany the student’s grade. These designations do not affect the grade point average. For students who receive a designation of “incomplete” or “other,” the grade reflects a calculation that gives zero credit for work not completed. It does not become part of the student’s record (except as discussed below). For students who receive a W, indicating withdrawal from the university within the last five weeks of classes, the grade is based on the performance of the student up to the time of withdrawal. It does not appear on the

student's record and is used solely in determining the student's eligibility for readmission. The special designations include the following:

INC ("incomplete")—Instructors report this designation to the registrar when a student fails to complete a course because of verified illness or other circumstances beyond the student's control that occur during the semester. Students must complete the work, and instructors must submit a revised grade, by the end of the fifth week of the next semester; otherwise, the Registrar's Office records the grade originally submitted. Students working off an "incomplete" must be certain that tests, papers, and other materials affecting their grade or essential to completing a course requirement are delivered *by hand* to the appropriate professor or office. Loss or lateness because of mail service is not an acceptable excuse for failing to meet academic deadlines. A student who receives two or more "incompletes" in a semester may not enroll in the next semester for more than 14 semester hours. Students should also be aware that they may go on probation or suspension when the "incomplete" is changed to a grade, either by an instructor or by default.

("other")—Instructors report this designation to the registrar when a student fails to appear for the final examination after completing all the other work for the course. Students must resolve the matter, and instructors must submit a revised grade, by the end of the first week of the second semester or by the end of the fourth week after commencement, whichever is applicable. If the Registrar's Office does not receive a revised grade, it records the grade originally submitted. A designation of "other" is also used if an accusation has been made to the Honor Council. Again, students should be aware that they may go on probation or suspension when the "other" is changed to a grade, either by an instructor or by default.

W ("withdrew")—This designation appears for each course in which students are enrolled at the time of their withdrawal from the university. Courses dropped by students before the "late drop" deadline are removed entirely from the transcript. Courses dropped, with the approval of the Committee on Examinations and Standing, after the deadline receive a W. When requests for late drops are denied by the committee, the registrar records the submitted grade. See "Voluntary Withdrawal and Readmission" under Withdrawals and Leaves (pages 39-40) for rules concerning withdrawal in the last five weeks of classes.

NG ("no grade")—This designation indicates that the instructor failed to report a grade. Instructors are responsible for resolving this situation as quickly as possible.

NC ("no credit")—This designation signals that no credit was granted for the course.

Grade Points. To compute grade point averages (see below) or determine minimums for academic performance, letter grades are numbered as follows:

<i>Grade</i>	<i>Grade Points</i>
A	4.00
B	3.00
C	2.00
D	1.00
F	0.00

Instructors may attach plus and minus signs to every grade except F. In those cases, one-third of a grade point is added or subtracted, respectively. It is general university grading practice to give pluses and minuses. The Committee on Examinations and Standing has drawn up guidelines on grading for the information of faculty and students. These guidelines are available from the Office of Student Affairs, Room 101, Lovett Hall.

Grade Point Averages. Grade point averages are calculated as follows. For each course, the credit attempted in semester hours and the points for the grade earned are multiplied. Then these products (one for each course) are added together, and the sum is divided by the total credit attempted. Grade point averages are reported each semester on the student's grade report and may appear on unofficial transcripts. However, grade point averages are not included on official transcripts nor, like class ranks, are they reported to any external agency.

President's Honor Roll. This honor roll, published each semester, recognizes outstanding students. To be eligible, students must have earned grades in a total of 12 or more semester hours without receiving a grade of F. (Pass/fail and satisfactory/fail courses may not be counted.) Approximately 30 percent of all undergraduates receive recognition each semester. While undergraduates enrolled in a four-year bachelor's degree program are always eligible for the President's Honor Roll, students enrolled in five-year bachelor's or master's programs are eligible only during their first eight semesters.

Academic Discipline

Academic Probation. Students are placed on academic probation at the end of any semester if:

- Their grade point average for that semester is less than 1.67
- Their cumulative grade point average is less than 1.67 (this requirement is waived if the grade point average for that semester is at least 2.00)

The period of probation extends to the end of the next semester in which the student is enrolled. Students on probation (academic or disciplinary) may not be a candidate for, or hold, any elected or appointed office, nor are they allowed to enroll in more than 17 semester hours.

Academic Suspension. Students are suspended from the university at the end of any semester if they:

- Earn grades that will place them on academic probation a third time
- Have a grade point average for the semester that is less than 1.00 (exceptions are made for students completing their first semester at Rice)

Students readmitted after a period of suspension will be suspended again if in any succeeding semester they fail to meet at least one of the following requirements:

- A cumulative and semester grade point average of at least 1.67
- A semester average of at least 2.00

The first suspension period is normally one semester; the second suspension period is at least two semesters. Students are not readmitted after a third suspension.

Students are suspended as soon as a responsible university official, normally the registrar, learns that their performance has been such as to place them on suspension. Suspension is lifted the first day of class of the semester when the student returns to the university. When students serve the nominal term of suspension but do not intend to return to Rice, suspension is lifted after permission from the Committee on Examinations and Standing is granted.

For students facing a first or second academic suspension who can show the registrar that they can complete their degree requirements in one semester if allowed to return, the suspension is reduced to probation. Students may invoke this ruling only once for a given academic degree plan.

Students who graduate at the end of a semester under academic circumstances that

would normally place them on probation or suspension will not have the terms “academic probation” or “suspension” placed on their transcript for that semester.

Disciplinary Probation and Suspension. The assistant dean of student judicial programs may place students on probation or suspension for an honor system violation or for other disciplinary reasons. Students on disciplinary suspension (including for an honor system violation) may not receive a degree even if they have met all academic requirements for graduation. They must leave the university within 48 hours of being informed of the dean’s decision, though in cases of unusual hardship, the college master and assistant dean of student judicial programs may extend the deadline to one week. Any tuition refund will be pro-rated from the official date of suspension, which is determined by the Registrar’s Office. While on suspension, students may not run for, or hold, any elective or appointed office in any official Rice organization, nor may they serve as an Orientation Week adviser once they return to the university. Participation in student activities and use of Rice facilities, including the student center, the colleges, the playing fields, the gym, and the computer labs, are limited to *enrolled* students.

Readmission After Suspension. Students seeking readmission after **academic suspension** should address a letter of petition to the Committee on Examinations and Standing, which must receive it at least one month before the beginning of classes. The petition should include two supporting letters from persons for whom the student has worked during the suspension period as a student or an employee. If the problems causing the previous difficulty appear to be resolved, the student generally is readmitted. Students returning from a second suspension must submit an academic program approved by the Office of Academic Advising before they are readmitted. These students must also maintain regular contact with that office throughout the semester. In some instances, the committee may postpone approval of readmission or rule that suspension is permanent. Under those circumstances, students desiring special consideration with regard to readmission should petition the committee in writing.

Students seeking readmission after leaving the university due to **disciplinary or other nonacademic action** should submit a petition in writing for review by the assistant dean of student judicial programs.

Rice Summer School. Although it may do so at its discretion, the Committee on Examinations and Standing does not normally place on probation or suspension students who perform poorly in the Rice Summer School. Students should be aware, however, that Rice Summer School grades affect their grade point averages.

Withdrawals and Leaves

Voluntary Withdrawal and Readmission. Students may withdraw voluntarily from the university at any time during the semester up until the last day of classes. If they are in good academic standing at the time of their withdrawal, students are normally readmitted after they submit a written application to the Committee on Examinations and Standing. If students withdraw for major medical or psychological/psychiatric reasons, however, they must meet the readmission conditions for an involuntary withdrawal (see below).

Students wishing to withdraw should inform their college master in person and give written notification to the vice president for student affairs, who notifies other offices of the university as necessary. If students withdraw within five weeks of the last day of classes, the committee takes into account their grades (which reflect their performance up to the day of withdrawal) when ruling on their readmission. Students whose grades would have led to suspension had they not withdrawn are treated, for purposes of readmission, as if they had been suspended. Such students must meet the requirements for readmission under academic suspension (see above).

Students who fail to give notice of withdrawal should expect to receive failing grades.

Involuntary Withdrawal. The university may insist on a student's involuntary withdrawal if, in the judgment of the vice president for student affairs, the student:

- Poses a threat to the lives or safety of him/herself or other members of the Rice community
- Has a medical or a psychological problem that cannot be properly treated in the university setting
- Has a medical condition or demonstrates behavior that seriously interferes with the education of other members of the Rice community

Students should submit written petitions for readmission after involuntary withdrawal to the vice president for student affairs, providing evidence that they have resolved the problems leading to their withdrawal. Some cases may require an interview with the director of the Rice Counseling Center, with the director of the Student Health Service, or with their designees.

Unauthorized Withdrawal. Students who leave the university without first obtaining permission to withdraw are considered to have resigned. Although students who resign are not normally considered for readmission, they may petition first the Committee on Examinations and Standing, then the vice president of student affairs. Withdrawal without permission is noted on the transcript, but readmitted students may petition to have this notation expunged from their record by following the procedures described in the Code of Student Conduct.

Leave of Absence. Students may request a leave of absence from the university by applying in writing to the Committee on Examinations and Standing at any time before the first day of classes in the semester for which they are requesting leave. A leave of absence taken after the first day of classes is considered a voluntary withdrawal.

To gain readmission following an approved leave of absence of not more than four semesters, students need only notify the vice president for student affairs at least one month before the beginning of the semester that they intend to end their leave. After a leave of more than four semesters, they should apply in writing to the Committee on Examinations and Standing as if the leave were a voluntary withdrawal (see above).

Approval of a leave of absence is always contingent on the student's satisfactory completion of course work in the semester preceding the leave. Students performing poorly may have their approved leave converted to suspension.

Approved Leave to Study Abroad. Students wishing to take a leave of absence to study abroad who intend to transfer credit back to Rice must complete an Approved Leave for Study Abroad Form and a transfer credit form (including required signatures). Forms are available from, and should be returned to, the Office of International Education, 101 Lovett Hall. This approval process takes the place of the regular request for a leave of absence (above). At the end of their foreign study and 30 days before classes begin at Rice, students must notify the director of international education, in writing, of their intention to either return to Rice or take a regular leave of absence.

Applicable Academic Regulations

Students enrolled in four- (or five-) year bachelor's programs may decide whether to operate under the academic regulations in effect when they first registered at Rice or those in effect when they graduate. If they graduate more than seven (or eight) years after their initial registration, they must operate under the regulations in effect at the time of their last readmission. Also, departments may review courses completed in a major more

than seven (or eight) years prior to the student's anticipated graduation. If the department concludes that a course no longer satisfies the requirements of the major, it is not credited toward the major program, although it remains on the student's record.

Academic Advising and Tutorial Programs

Freshman and sophomore students consult with academic advisers through their residential colleges. In a program overseen by the college masters, more than 150 faculty associates are available to give broad, general advice to students as well as to provide specific information about individual disciplines. Also available within each college are faculty members designated as "divisional advisers," who represent the Schools of Humanities, Social Sciences, Natural Sciences, and Engineering. They advise students whose prospective majors fall into their particular divisions and approve their course schedules, including those classes students wish to drop or add. Majors in music and architecture obtain course approval from academic advisers in the Shepherd School of Music and the School of Architecture.

Once students designate a departmental major, usually in their fourth semester, they go to the major department (or departments in the case of a double major) for academic advising and course approval. Area majors obtain approval from the Office of Academic Advising, which operates in conjunction with the academic departments involved.

Office of Academic Advising

The director of academic advising, assisted by faculty associates, is the administrative liaison between the academic departments and the college advising system. The director maintains an up-to-date file on departmental course requirements, coordinates a tutorial program, provides training for faculty and peer advisers, and organizes the exchange of course information among students, advisers, and departments.

Programs that cross academic disciplines—area majors, preprofessional advising, and fellowships—are the director's responsibility, as are programs like Majors Day and Orientation Week Academic Fair, both of which inform students about academic options within the Rice curriculum.

The Office of Academic Advising also supplies general academic information, brochures and application forms for foreign study and exchange programs, information on prestigious national fellowships (e.g., Rhodes, Marshall, and Luce), and application packets for various graduate admissions tests (e.g., GRE, MCAT, LSAT, and GMAT). Faculty advisers are available to counsel students with academic problems or questions and those students applying to graduate school.

Rice Tutoring Program

This program provides free assistance to freshmen in any course and to upperclass students having difficulty with introductory courses. Each department names a department coordinator who approves tutors, assigns students to group or individual tutoring, and signs off on completed tutorial sessions.

Students who are having academic difficulty and students who need tutoring or who would like to serve as tutors should contact the Office of Academic Advising for more information.

Summer School

Rice Summer School offers courses for credit to Rice students, visiting undergraduates, graduate students, and Class III students (see page 47); 6 to 8 semester hours are considered a full load. Interested students should complete the application form found in the Summer Programs catalog. Admission is automatic for any Rice undergraduate or graduate student in good standing. Visiting students must send official transcripts (mailed directly from their universities and colleges to the School of Continuing Studies) as well as the completed application. Acceptance in the Rice Summer School carries no implications for regular admission to Rice.

All applicants, including Rice students, should submit their applications to the Rice Summer Program Office with the application fee and a tuition deposit. The remaining tuition is due in full at registration before the beginning of classes. Auditors of summer school courses, who are considered visiting students, must pay full tuition and fees. Limited financial aid is available for Rice students only.

It is essential that students apply by the deadlines listed in the Summer Programs catalog. Courses that do not generate enrollments sufficient to cover their costs may be canceled. Students may apply after the deadline (but before the start of classes) by paying a late fee.

For more information, including 1998 tuition and registration information, students should contact the Rice Summer Program Office at (713) 520-6022 or (713) 527-4803.

Admission of New Students

From its beginning, Rice University has sought to maintain an academic program of the highest excellence for a small body of students. While the university's resources and programs have expanded over the past years, the total number of students who matriculate remains relatively small, approximately 650 students in each first-year class.

We seek students of keen intellect who will benefit from the Rice experience. Our admission process employs many different means to identify these qualities in applicants. History shows that no single gauge can adequately predict a student's preparedness for a successful career at Rice. For example, we are cautious in the use of standardized test scores to assess student preparedness and potential. In making a decision to admit or award financial assistance, we are careful not to ascribe too much value to any single metric, such as rank in class, grade point average, or standardized testing.

We use a broader perspective that includes such qualitative factors as the overall strength and competitive ranking of a student's prior institution and the rigor of his or her particular course of study. Taken together with a student's test scores and academic record, these additional factors provide a sound basis to begin assessing the applicant's potential.

Beyond these objective tests of academic competence, we look for other, more subjective qualities among applicants, such as creativity, artistic talent, and leadership potential. We believe that students who possess these attributes in combination with strong academic qualifications will benefit most from a Rice education. Through their contributions and interactions with others, they will enrich the educational experience

of all students. These qualities are not revealed in test scores but are manifest in the breadth of interests and the balance of activities in their lives.

Rice University seeks to create on its campus a rich learning environment in which all students will meet individuals whose life experiences and world views differ significantly from their own. We believe that an educated person is one who is at home in many different environments, at ease among people from many different cultures, and willing to test his or her views against those of others. Moreover, we recognize that in this or any university, learning about the world we live in is not by any means limited to the structured interaction between faculty and students in the classroom but also occurs through informal dialogue between students outside the classroom.

To encourage our students' fullest possible exposure to the widest possible set of experiences, Rice seeks in its admission policies to bring bright and promising students to the university from a range of socioeconomic, cultural, and geographic origins. We seek students whose parents did not attend college, as well as students from families with a well-established history of college-level education. Rice places a premium on recruitment of students who have distinguished themselves through initiatives that build bridges between different cultural, racial, and ethnic groups. In so doing, we endeavor to craft a residential community that fosters creative, intercultural interactions between students, a place where prejudices of all sorts are confronted squarely and dispelled.

In assessing how well an applicant can contribute to enlivening the learning environment at Rice, we also try to determine the relative challenges that he or she may have faced. For economically disadvantaged students, this may mean achieving a high level of scholastic distinction while holding down a job in high school. For a first-generation student, this might mean achieving high standards for academic success within an environment relatively indifferent to intellectual attainment. Or it might mean overcoming a disability to excel in sports, music, or forensics. For students who do not have particular disadvantages, we also look at whether they chose a more challenging road than the normal path through high school. This might mean an especially strenuous course of study, a prolonged and in-depth engagement in a school project, or a particularly creative and wide-ranging set of extracurricular activities.

Our admission process precludes any quick formula for admitting a given applicant or for giving preference to one particular set of qualifications without reference to the class as a whole. An inevitable consequence of this approach is that some otherwise deserving and well-qualified students will not be admitted to Rice. By selecting a wide range of matriculants of all types, the admission process seeks to enrich the learning environment at Rice and thus increase the value of a Rice education for all students.

Due to the nature of the Rice education, Rice enrolls undergraduate degree candidates on a full-time basis only. First-year applicants may apply for the fall semester only. Other applicants may apply to enter the fall or spring semester, except for architecture applicants who may enter only the fall semester.

Applicants are selected on a competitive basis in six academic divisions: (1) architecture, (2) engineering, (3) humanities, (4) music, (5) natural sciences, and (6) social sciences. Candidates should give careful consideration to the category under which they wish to be considered. However, once enrolled, most students are able to move freely among most divisions after consultation with their advisers. Music students must pursue the music program for at least the first year before changing divisions. The Schools of Music and Architecture maintain limited enrollments; all majors are subject to faculty approval.

Those offered admission are expected to complete the remainder of their courses with the same superior performance that led to their admission.

First-Year Applicants

There are four areas of focus generally used in evaluation of first-year candidates for admission: scholastic record as reflected by the courses chosen and the quality of performance, recommendations from high school, the application presentation of personal information and essays, and standardized testing (SAT I or ACT and three subjects from the SAT II).

The High School Record. Students must complete at least 16 college preparatory units as follows:

English	4	Laboratory science	2
Social studies	2	(e.g., biology, chemistry, physics)	
Mathematics	3	Additional credits in above-	3
A foreign language	2	listed areas	

Students admitted with academic deficiencies will be asked to complete the required work by taking high school or college-level courses during the summer before enrollment at Rice.

The natural science and engineering divisions require trigonometry or other advanced mathematics courses and either chemistry or physics. Students may substitute a second year of chemistry or biology for physics.

Recommendations. Candidates must submit evaluations from a counselor and one teacher. The necessary forms are included in the application.

The Application. The application provides the committee with important information on the student's background and gives the applicant an opportunity to provide statements on his or her interests, experiences, and goals. Both the Rice application and the Common Application are accepted. *The application fee is \$35.* Students for whom this fee creates a hardship may apply for a waiver. Freshman applicants should provide proof of a fee waiver for the SAT I or ACT test or eligibility for the school lunch program. In any case, a letter from the student's high school counselor is required. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver.

Standardized Testing. The SAT I or ACT and three subject exams from the SAT II are required for admission. Applicants to humanities, social sciences, architecture, and music divisions must take the SAT II tests in writing and two other subjects of their choice. Natural sciences applicants are required to take writing, a math, and a science test. Engineering applicants must take writing, a math, and either the chemistry or physics test. Home-schooled students must take five SAT II tests, one in each of the following areas: writing, math, science, social sciences, and foreign language.

These exams are administered by the College Board and the American College Testing Program. Bulletins and test registration forms are available from high school counseling offices. The applicant is responsible for arranging to take the tests, and official score reports must be submitted before the student can be considered for admission. The College Board code for Rice is 6609. The ACT code is 4152.

Personal Interview. Although a personal interview is *not a requirement*, we *recommend* an interview for first-year applicants as an excellent opportunity to discuss the applicant's interests, needs, and questions. On-campus interviews are conducted between May 1 and December 31 by the admission staff and a select group of Rice senior students. Off-campus interviews are conducted throughout the United States between

May 1 and January 15 by Rice alumni. Please consult the application packet or call the admission office for details.

Music Audition. Candidates to the Shepherd School of Music must arrange for an audition with a member of the music faculty.

Architecture Portfolio and Interview. Architecture applicants must submit a portfolio. An interview with a faculty member from the School of Architecture is strongly recommended.

Decision Plans

Early Decision Plan. Early Decision is designed for students who have Rice as their first choice. Students may initiate applications to other colleges but may make an Early Decision application to one college only.

Early Decision applicants must complete the required standardized testing on or by the October testing dates in the senior year. All other materials should be postmarked by November 1. Admission notices will be mailed by December 15. The committee will admit, defer, or deny Early Decision applicants. Deferred applicants are considered with the Regular Decision pool, and seventh-semester grades and additional standardized test scores will then be considered.

It is important to note that if admitted under Early Decision a candidate must withdraw all other college applications, may not make any additional applications, and must accept Rice's offer of admission by submitting a \$100 nonrefundable deposit by January 2. An additional \$50 housing deposit is required of those desiring on-campus accommodations.

Those accepted under Early Decision may receive an estimate of need-based financial aid by completing the Rice University Financial Aid Statement (RUFAS), which is sent by the Office of Financial Aid in November to Early Decision applicants. Note that **official** financial awards may be made only after the Office of Financial Aid has received the three following documents (all of which can be completed only **after** January 1): the Free Application for Federal Student Aid (FAFSA), the Rice University Financial Aid Form, and copies of the family's IRS tax returns.

Interim Decision Plan. First-year applicants who complete their standardized testing on or by the December testing dates and who postmark all other materials by December 1 may be considered under the Interim Decision Plan. Decisions are mailed by February 10. The committee will admit, defer, or deny Interim Decision applicants. Deferred applicants are considered with the Regular Decision pool, and seventh-semester grades and additional standardized test scores will then be considered.

Interim Decision applicants who are offered admission must make a \$100 registration deposit by May 1 to reserve a place in the incoming class. After May 1, deposits are not refundable. Those who desire a room on campus must make an additional \$50 deposit.

Regular Decision Plan. Regular Decision applications postmarked by January 2 are notified of the outcome by April 1. Candidates who miss the deadline must do so in full knowledge that they are in a less competitive position.

Regular Decision applicants who are offered admission should make a \$100 registration deposit by May 1 to reserve their places in the incoming class. After May 1, deposits are not refundable. Those who desire a room on campus must make an additional \$50 deposit.

Accelerated Students

Rice University will accept applications from students who are completing high school in less than four years. It is important to note that these students will compete with other candidates who will be completing four years of high school. Therefore, it is the candidate's responsibility to demonstrate that he or she has exhausted *all* college preparatory course work at his or her school. Further, because of the residential focus and commitment to student self-governance at Rice, candidates must also demonstrate the maturity and personal development that would allow them to participate fully and responsibly in campus life. Because of the unique circumstances surrounding the accelerated student, it is strongly recommended that these candidates have an on-campus interview with a member of the admission staff before the application deadline.

Transfer Students

Students with superior records from two-year or four-year colleges or universities may apply as transfer candidates. Applicants for transfer admission must file the following with the Office of Admission:

- The written application
- Official transcripts of all high school and college work completed to date as well as courses in progress
- Two faculty recommendations
- A recommendation from the dean of students
- SAT I or ACT scores
- \$35 application fee

Applications with the appropriate documents must be postmarked by April 1 for fall term admission and November 1 for spring term admission. Notification of the admission decision is mailed by June 1 and December 15, respectively. The criteria used in evaluating transfer applications are similar to those applied to applicants for the first-year class, except that special emphasis is given to performance at the college level. Because of the highly competitive nature of transfer admission, it is recommended that applicants have a minimum 3.20 (4.00 scale) grade point average on all college work. The SAT I or ACT must be taken by April for fall application and October for spring application. The SAT II is not required.

Students for whom the \$35 application fee creates a hardship may apply for a waiver. Transfer applicants must send a copy of the Student Aid Report that they receive after completing the Free Application for Federal Student Aid (FAFSA) along with a request for a fee waiver to the Office of Admission. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver.

Transfer students must be registered in residence at Rice for at least four full semesters during the fall or spring terms and must complete no fewer than 60 semester hours before earning a Rice degree.

Advanced Placement/International Baccalaureate/Placement Tests

Students who score a 4 or 5 on the Advanced Placement College Board examinations before matriculation at Rice are given university credit for corresponding Rice courses.

Students who earn the International Baccalaureate diploma will receive credit for individual higher-level exams for which they receive a score of 6 or 7. Students from high schools that offer International Baccalaureate courses but not the diploma will receive credit according to the same criteria.

During Orientation Week, a test on calculus with elementary functions is given. This test will also be given the first day of classes of the spring semester. Satisfactory performance results in credit for MATH 101. (A fee of approximately \$30 is charged for taking the test.)

Furthermore, during Orientation Week, entering students may take placement tests administered by various departments at Rice. On the basis of these tests, students may be advised to register for courses beyond the introductory level. In most cases, credit is not given for these tests.

Other Students

Visiting Students. Students who wish to spend a semester or a year at Rice taking courses for credit to be applied toward their undergraduate degree at another school may apply for admission as visiting students through the Office of Admission. The student's application should be accompanied by the \$35 application fee, an official high school transcript, an official transcript of college work to date, an SAT I (SAT) or ACT score, and recommendations from the dean of students and a faculty member who has taught the student within the past academic year. Visiting student applications should be postmarked by April 1 for the fall semester and November 1 for the spring semester.

Visiting students are assigned membership to one of the residential colleges during their stay and are charged the same fees as other undergraduates. In a few classes where enrollment is limited because of space or other considerations, candidates for Rice degrees have priority over visiting students.

Visiting students may apply to transfer to Rice only after having left Rice for at least one semester.

Class III Students. Students with a Class III standing at Rice have an undergraduate or graduate degree from an accredited college or university and are taking courses at Rice for credit but not in a specific degree program. Students interested in this program should contact the Office of Graduate Studies.

Second Degree Students. An individual who has a bachelor's degree from another institution and desires another in a different area of focus may apply as a second degree student on a space-available basis. Students may only pursue a second degree that is different from their first degree. For example, applicants already holding a B.A. may apply only to B.S. programs, and vice versa. The application, a \$35 application fee, official transcripts of all undergraduate and graduate work, two letters of recommendation from the most recent college attended, and standardized test scores (the SAT, SAT I, or ACT) are required to complete an application file. The deadline for fall semester admission is June 1 and the deadline for the spring is November 1.

Second degree applicants with a prior bachelor's degree from Rice should apply in writing to the Committee on Examinations and Standing in care of the vice president for student affairs.

Dual Enrollment Students. Accelerated high school juniors and seniors who have taken all the courses in a given discipline available to them in high school may request admission to Rice for the purpose of taking one or more university-level courses as dual enrollment students. The written application, application fee of \$35, high school transcript, a teacher and a counselor recommendation from the applicant's high school, and an SAT I or ACT score should be sent to the Office of Admission by June 1 for the fall semester or December 1 for the spring semester.

Tuition for new students is \$580 per semester hour plus a \$77 registration fee, the total not to exceed \$6,950. Tuition for returning dual enrollment students would be the rate (plus inflation) at which they first took dual enrollment courses at Rice. These charges are for the 1997-98 school year and are subject to change in subsequent years. Financial assistance is not available for this program.

Auditors. Any interested person, including currently enrolled students, may audit one or more courses at Rice by securing permission of the instructor and by registering as an auditor with the registrar. The university grants no academic credit for such work. Audit credit does not appear on transcripts. Currently enrolled students may audit courses without charge. Rice alumni are charged a fee of \$217 per course per semester. All others are charged \$434 per course per semester for the privilege of auditing.

Tuition, Fees, and Expenses

Charges for tuition, fees, and room and board are billed to students each semester. Students may pay the charges in full by the due date or in installments over the course of the semester. The fall semester due date is August 10, and the spring semester due date is December 31. The following costs apply to undergraduates in the 1997-98 school year.

Tuition	Annual	Semester	Hour*
Entering first-year and transfer students and other students	\$13,900	\$ 6,950	\$580
Students matriculating in 1996-97	\$13,200	\$ 6,600	\$550
Students matriculating in 1995-96	\$12,350	\$ 6,175	\$515
Other continuing full-time students	\$11,300	\$ 5,650	\$475
Fees	Fall	Spring	Annual
Student activities**	\$ 67.85		
Athletic events	\$ 70.00		
College	\$ 50.00		
Health service	\$104.00	\$104.00	
Shuttle	\$ 10.50		
Total fees	\$302.35	\$104.00	\$406.35
Room and Board	Annual	Semester	
Room	\$ 3,500	\$ 1,750	
Board	\$ 2,700	\$ 1,350	

*By special permission.

**Fifth-year students and students working toward a second bachelor's degree may pay a reduced student activities fee of \$4.70, which covers the Student Association, University Court, and Honor Council portions of the activity fee, and elect not to pay the college fee.

Any undergraduate who withdraws or takes an approved leave of absence and then gains readmission to the university pays the tuition applicable at their matriculation, plus annual Consumer Price Index increases for a period not to exceed six years. After six years, students pay the tuition applicable to the entering freshman class.

Refund of Tuition and Fees

Students who withdraw during the first two weeks of the semester are not charged tuition or fees for that semester. Students who withdraw during the third week must pay 30 percent of the semester's tuition, receiving a 70 percent refund. The amount of the refund drops by 10 percent at the beginning of each successive week that passes before withdrawal until the ninth week, after which no refund is made. Refunds for first-year students who are federal (Title IV) aid recipients are prorated in accordance with the Higher Education amendments of 1992 and any related regulations.

For students withdrawing after the second week of classes in a semester, fees or special charges (see below) are not refunded. Similarly, students withdrawing or taking leaves of absence in the spring semester do not receive a partial refund of fees paid for the full year. Students withdrawing at any time forfeit the \$100 registration deposit they paid as incoming students.

Students who receive approval to enroll with a course load of fewer than 12 hours during the first nine weeks of the semester may be entitled to a tuition rebate. Any such rebate depends on the actual date by which the Registrar's Office processes the relevant drop form.

Students unable to resolve with the Cashier's Office any request for special consideration in connection with waivers, refunds, or adjusted payments on tuition, fees, and other charges should forward their appeals to the vice president for student affairs. Resolution of waivers and refunds for room and board charges require the approval of the vice president for finance and administration.

Living Expenses

Residence fees cover dining hall costs and residence maintenance. They are established each year as needs dictate. For 1997-98, the annual room and board charge for residence in a residential college is \$6,200. This charge provides room and all the meals eaten during the year.

Housing. About 65 percent of Rice undergraduates live in the on-campus residential colleges. Information about the residential colleges and room application forms accompany the notice of admission sent to each new undergraduate. Room reservations cannot be made before notification of admission. Further information on housing in the residential colleges is available from the Office of Student Affairs, and information on off-campus housing is provided by the Office of Academic Advising.

When they receive their residential college room assignments for the academic year to follow, students must sign a lease agreement. To reserve their space, current students must sign a lease by the date established in their respective colleges but no later than April 15. New students must make a \$50 deposit before May 1. These nonrefundable deposits are applied to the following semester's room and board charges.

Board. Meals are priced on an à la carte basis with the exception of four prepaid dinners included in the total room and board charge. The colleges provide three meals per day, Monday through Friday, and a continental breakfast and brunch on Saturday and Sunday. Meals are not served during the Thanksgiving holidays, at the midyear break, over the fall and spring midterm recesses, and during spring holidays. Information on optional meal plans is available from the College Food Service.

Payments and Refunds. Students may pay their residence fee in installments. The exact amounts and due dates appear in the Residential Lease Agreement. Students moving out of the college for any reason receive a refund (or a credit) of the reduced balance of board charges but must still pay the full room charge for the entire academic year. Possible exceptions in the case of academic suspension, Rice-sponsored study abroad, and family emergencies are treated on a case-by-case basis.

Special Charges

The following charges are separate from the regular fees. For charges due to late registration or course changes made after the deadlines, see Registration (pages 30-32).

Orientation Week room and board (required for all new students)	\$150
Late application fee for Class III students	\$ 52
Part-time registration	\$ 77
Orientation Week college fee (paid to the individual college)	\$110
College social activities fee (paid to the individual college)	\$ 15

Health Insurance

All Rice students must have health insurance. Students may purchase insurance for the 1997-98 school year through the university program developed for Rice students at a yearly premium of \$749 (Plan A) or \$575 (Plan B). Coverage is effective from 12:01 A.M., August 15, 1997, until 12:01 A.M., August 15, 1998. Dependent coverage is also available. Both the Cashier's Office and the Office of Student Activities have application forms and policy descriptions. Students who already have medical insurance must obtain a waiver form showing proof of insurance, sign it, and return it to the Cashier's Office by August 10 to avoid being charged automatically for insurance.

Teacher Certification Program Fees

Students enrolling in the student teaching apprenticeship or internship plans must pay a \$100 registration fee for each semester. An additional \$25 fee (paid to the School of Continuing Studies) is due for each summer school session.

Delinquent Accounts

No student in arrears in any financial obligation to Rice as of the last day of registration for any semester can register for classes. The university will not issue certificates of attendance, diplomas, or transcripts at any time for a student whose account is in arrears.

Students who have not made satisfactory arrangements with the cashier for payment of current charges or who have moved on campus without a proper room contract may be dismissed from the university.

Transcripts

Transcripts are issued on written request to the Registrar's Office. The registrar does not issue transcripts without the consent of the individual whose record is concerned. The charge of \$4 for each copy is payable in advance. Those requesting transcripts by mail should include payment with the request.

Financial Aid

The financial aid program at Rice provides assistance to meet the costs of university attendance for all admitted students who demonstrate computed financial eligibility. Through grants, low-interest loans, campus work opportunities, or a combination of these programs, Rice attempts to give students sufficient aid to meet their educational expenses.

The financial aid program receives funding from many sources. Rice uses contributions from alumni and friends to establish and maintain scholarships and loan funds. Federal grant and loan programs, a state grant program, and the Rice tuition grant program also provide funds. Awards are based primarily on financial need.

The university determines need using information supplied by students in the Free Application for Federal Student Aid (FAFSA). "Need" is the amount required to meet the difference between each student's total educational expenses and his or her family's resources. Parents are expected to contribute according to their financial means, taking into account income, assets, number of dependents, and other relevant factors. Students are expected to contribute as well from their own assets and earnings, including appropriate borrowing against future earnings.

The brochure *Rice University Financial Aid* explains the assistance program in detail. Copies are available from the Office of Admission or the Office of Financial Aid. The university also publishes budgets that realistically summarize student expenses, including living costs at home and on or off campus, personal expenses, and travel.

Application

To apply for financial assistance, students must:

- Complete and return to the university the Rice University Application for Financial Aid
- File the Free Application for Federal Student Aid (FAFSA)
- Provide a photocopy of their parents' and their own IRS 1040, 1040A, or 1040EZ

Rice considers applicants for all appropriate assistance administered by the university, including grants, scholarships, loans, and work. Students receive notification of awards once their financial aid file is complete. Early-decision candidates are mailed a Rice University Financial Aid Application in October.

Financial aid awards are made on an annual basis. Payment terms are specified in the award letter. Because financial circumstances change from year to year, Rice conducts an annual review of need and awards to make corresponding adjustments. For this reason, continuing students must complete and return the Rice University Application for Financial Aid to the university and file the FAFSA every year that they seek assistance.

The university from time to time may adjust its methods of computing financial need or its policies regarding the types of financial assistance that it offers so as to meet the financial needs of the largest possible number of students. Therefore, the amount and type of financial aid may change from year to year, even when the student's financial situation appears to remain relatively stable.

Low-Interest Financing

Meeting the costs of higher education in a private university may be difficult even when the usual analysis indicates no need for financial aid. Although a family's financial

situation may be adequate to cover the cost of tuition, fees, and room and board without financial aid, Rice understands that payment of relatively large sums at stated times may create hardships or require sacrifice. The university offers two payment plans to enable families to finance the students' educational costs. Both require low-interest charges.

A **deferred payment plan** divides each semester's charges over four installments. Students arrange for deferred payment through the Cashier's Office. Applications and details are available each semester at the time of billing. **Longer-term financing** is available to eligible students through the Federal Direct Parent Loan for Undergraduate Students. Applications are available in the Office of Financial Aid, and Rice will arrange processing where needed.

Financial Aid Policy

Undergraduates may receive financial aid for 10 semesters. The one exception is the Rice tuition grant (see Section C of *Rice University-Financial Aid Policies and Procedures*). All semesters for which students have an active transcript in the Registrar's Office count in the 10-semester limitation whether they have received financial aid or not.

Satisfactory Progress Policy for Financial Aid Recipients. The Higher Education Act of 1965, as amended by Congress in 1980, mandates that institutions of higher education maintain minimum standards of "satisfactory progress" for students to receive financial aid.

Required Grade Point Average. Students at Rice are placed on **financial aid probation** if at the end of any semester they have either of the following:

- A cumulative grade point average that is less than 1.67
- A grade point average for that semester that is less than 1.67

The period of probation extends to the end of the next semester that the student is enrolled at the university.

Except for those completing their first semester at Rice, students are **ineligible for financial aid** if at the end of any semester they earn either of the following:

- Grades that would result in financial aid probation for a third time
- A grade point average that is less than 1.00 for that semester

The period of financial aid ineligibility normally lasts at least one semester.

Students who regain financial aid eligibility will lose it again if in any succeeding semester they fail to achieve either of the following:

- A cumulative and semester grade point average of at least 1.67
- A semester grade point average of at least 2.00

Ineligibility a second time results in at least two semesters without aid. Normally students receive no further aid after a third ineligibility.

Required Semester Hours. Students failing to make "satisfactory progress" in course work may become ineligible for aid. Students must earn:

- At least 18 semester hours credit by the end of the first academic year
- At least 44 hours by the end of the second year
- At least 70 hours by the end of the third year
- At least 96 hours by the end of the fourth year

The academic year commences with the first day of classes of the fall semester and continues to the first day of classes the following fall. Students denied financial aid because of insufficient semester hours regain eligibility only when they complete enough credits, including incomplete courses, to make up the shortage.

Termination of Aid and Appeal. The Office of Financial Aid sends written notification to students qualifying for financial assistance who have not made minimum “satisfactory progress” and whose aid therefore is being terminated. At the end of the fall semester, the notice is sent to the student’s college. At the end of the spring semester, the notice is sent to the most recent permanent address provided to the registrar by the student. In both cases, the office considers the notifications, once sent, to be delivered.

Any student ruled ineligible for financial aid due to lack of “satisfactory progress” may appeal such action to the Committee on Admission and Student Financial Aid. Students should send their appeals in writing to the chair of the committee, which may take into account mitigating circumstances.

Regaining Eligibility. To regain eligibility, students must address a letter of petition to the Committee on Student Financial Aid, following the procedures for the readmission of suspended students; see “Readmission After Suspension” (page 39). Suspended students readmitted by the Committee on Examinations and Standing need not petition the Committee on Student Financial Aid.

Student Loan Funds

The Office of Financial Aid awards Perkins Loans and William D. Ford Federal Direct Loans to help students meet the self-help portion of aid included in university financial aid policy.

A few endowments for student loans have been established at Rice primarily as memorial tributes. These funds exist separately from the normal financial aid program. Rice uses them to make emergency loans to students experiencing unexpected financial problems or showing additional need beyond regular eligibility.

Student Employment

Jobs are available either on or off campus for students interested in working part time during the academic year. Students seeking employment should apply directly to the Office of Financial Aid.

Vocational Rehabilitation

The Texas Rehabilitation Commission (TRC) provides assistance in paying tuition and nonrefundable fees for students who have certain disabling conditions. Once a TRC counselor approves their vocational objectives, students affected by orthopedic deformities, emotional disorders, diabetes, epilepsy, heart problems, and other disabling conditions are eligible for assistance. The TRC offers a range of services to help handicapped students become employable. Interested students should apply to the Texas Rehabilitation Commission.

Students with visual handicaps should contact the Texas State Commission for the Blind.

Scholarships and Awards

Scholarships and awards at Rice include the following:

General Awards and Scholarships

Leo M. Acker Memorial Scholarship
 Joe L. and Barbara Allbritton Scholarship
 Helen and Herbert Allen Scholarship
 Herbert Allen Scholarships
 Florrie Ethel and M. E. Andrews Scholarship
 Robert and Elaine Andrews Scholarship
 Mary Bentley and Kingsland Arnold Scholarship
 Samuel S. Ashe Scholarship
 Asian American Youth Organization Scholarship
 Astronaut Fund
 Max Autrey Memorial Scholarship
 Axson Club, Sarah L. Collins Scholarship
 Axson Club, Pauline M. Crouch Scholarship
 Axson Club, Special Scholarship Honoring Mrs. A. S. Foote
 Axson Club, Katie B. Howard Scholarship
 Axson Club, Elanor Trotter Huddleston Scholarship
 Axson Club, Margaret Owens and Samuel K. McLelland Memorial Scholarship
 Axson Club, Dr. Margaret Rose McLelland Scholarship
 Axson Club, Lucille Vaughan Endowed Scholarship
 Axson Club, Ellen Axson Wilson Scholarship
 Graham Baker Studentship
 James A. and Alice Graham Baker Distinguished Scholar
 James A. and Alice Graham Baker Honor Scholars
 Lee E. Baker Memorial Scholarship
 James Foulds Barbour Scholarship
 Eric and Arabella Beall Scholarship
 H. Leroy Bell Scholarship
 Bhatia Foundation Asian American Scholarship
 Mr. and Mrs. Val T. Billups Scholarship
 Paul Frederick Bobb Award
 Beverly and Donald Bonham Scholarship
 Tom W. Bonner Scholarship
 Linda Burge Bramlett Memorial Scholarship
 Weldon Brigrance Scholarship
 Fletabel Denton Briggs Memorial Scholarships
 Franz and Frances Brotzen Scholarship
 Vandiver Brown Scholarship
 Robbie N. Brunner Endowment Fund
 Halora Adams Burleson Endowed Fund
 Clyde and Ethel Butcher Scholarship
 Harrianna Butler Scholarship
 Daniel M. Caesar Scholarship Fund
 Chapman-Bryan Memorial Scholarship
 George Alva Chatfield, Sr., Scholarship
 Rebecca Frances Burrell Chenault Scholarship
 Barbara Long Chilton Scholarship

Class of 1921 Scholarship
 Class of 1929 Scholarship
 Class of 1930 Scholarship
 Class of 1931 Scholarship
 Class of 1932 Scholarship
 Class of 1933 Scholarship
 Class of 1934 Scholarship
 Class of 1935 Scholarship
 Class of 1936 Scholarship
 Class of 1937 Scholarship
 Class of 1938 Scholarship
 Class of 1939 Scholarship
 Class of 1940 Scholarship
 Class of 1941 Scholarship
 Class of 1942 Scholarship
 Class of 1943 Scholarship
 Class of 1944 Scholarship
 Class of 1945 Scholarship
 Class of 1946 Scholarship
 Class of 1947 Scholarship
 George S. Cohen Scholarship
 Arthur B. Cohn Scholarship
 College Bowl Champions Scholarship
 College Women's Club Scholarship
 Colonneh Club Scholarship
 William Arthur Combs Scholarship
 Millie Tutt Cook and Mildred Cook Scholarship
 John W. Cox Research Fund for Scholarships and Fellowships in
 Bioengineering and Biosciences
 Dr. Margaret Crofton Scholarship
 Tom Crumpton Memorial Award
 Kenneth Wallace Cunningham Scholarship
 Daughters of the American Revolution, John McKnitt Alexander Scholarship
 Daughters of the American Revolution, Fannie Bess Emery
 Montgomery Scholarship
 Daughters of the American Revolution, Lady Washington Chapter
 Centennial Scholarship
 Pradipta Kumar Day Scholarship
 Decade 1975 Scholarship
 Decade 1976 Scholarship
 Thomas A. and Pauline M. Dickson Scholarship
 Edith Jo Leeseman Dissinger Scholarship
 Laurine Wade Douglas Scholarship
 Thomas P. and Maude Seeger Dow Scholarships
 Samuel Rhodes Dunlap Scholarship
 Nan Gayle Dupont Scholarship
 James H. Durbin Scholarship
 C. A. Dwyer Scholarship
 James H. and Minnie M. Edmonds Scholarship
 T. C. Edwards Scholarship
 Epoch Matching Funds
 Catherine Goodrich Fay Scholarship
 Rodney A. and Elizabeth Gilbert Finlayson Fund

John R. and Ila Morgan Fisk Scholarship
 Thomas Flaxman Scholarship
 Thomas R. and Julia H. Franklin Scholarships
 Joe Gallegly Scholarship
 Gee Family Scholarship
 General University Scholarship Fund
 George Foundation Scholarship
 Getola and Verveer Families Scholarship
 Mary Parker Gieseke Scholar
 Susanne M. Glasscock Scholarship
 Herbert Godwin Endowment Fund
 Richard P. Goodwin Scholarship
 H. Frank Goss and Janice H. Goss Scholarship
 Richard L. Grider Scholarship
 Marjory Meyer Hasselmann Scholarship
 William Randolph Hearst Scholarship Endowment Fund
 James D. Henry Scholarship Fund
 Annette Schreiber Hill and William Bruce Hill Scholarship
 Lionel B. Hohenthal Scholarships
 Washington Cone Holliman Scholarship
 Honors Scholarship
 Houston Junior Chamber of Commerce Foundation International Program
 Lillian and Carl Illig Scholarships
 Mercer T. Ingram Scholarship
 Interfaith Charities Scholarship
 Max Henry Jacobs Scholarship
 Meredith H. James Scholarship
 Jameson Fellowship
 Alfred R. and Eleanor H. Johnson Scholarship
 Gaylord Johnson Scholarship
 Grant William Jordan and Cora Jordan Memorial Scholarships
 John T. King Scholarship
 Alan Kyle Scholarship
 Carolyn Walker Lard Scholarship
 Julia Merle and Roy Lay Scholarship
 Leadership Award
 A. C. Lederer, Jr., Scholarship
 Patrons of E. L. Lester and Company Scholarship
 Mason G. Lockwood Engineering Scholarship
 The Lottman Scholarships
 Daniel B. and Mary H. Lovejoy Scholarship
 Genevieve Parkhill Lykes Scholarship
 J. Everett McAshan Scholarship
 Margaret Brokaw McCann Scholarship
 John Charlton McCoy, Jr., Scholarship
 William A. McElroy Scholarship
 Michael Vincent McEnany Award
 J. L. C. McFaddin Scholarship
 W. P. H. McFaddin Scholarship
 John P. McGovern Outstanding Premedical Student Award
 Emma S. McGree Scholarship
 Bayliss McInnis and Family Scholarship
 James G. and Alberta Matteson McMurtry Scholarship

Nancy Mauney Mafrige Scholarship
 Helen South Martin Scholarship
 Franklin G. and Harriet Chelgren Meck Scholarship
 Hope and Byron Meredith Scholarship
 Gilbert A. Metz, Jr., Scholarship
 Achille and Malline Meyer Memorial Scholarship
 Edmund B. Middleton Scholarship
 John and Harriet Millington Scholarship
 Earl Douglas Mitchell Scholarship
 Mobil Scholarship
 Frances Black and Raymond Moers Scholarship
 Elizabeth Morford Scholarship
 Berney L. Morgan Scholarship
 W. Kyle Morrow, Jr., Scholarship
 Motheral-Neilan Scholarship
 Leon M. Nad Scholarship
 Ida R. and Hanna E. Nussbaum Scholarship
 Rebecca Raphael and Lily G. Nussbaum Scholarship
 Charles Breckenridge Parkhill Scholarship
 J. H. Pearlstone Memorial Scholarship
 Raymond Pearson Scholarship
 Peregrine Award Fund
 Mrs. Carter Harris Prather Endowed Fund
 Presidential Scholarship
 Elsie Rachlin Scholarship
 Emanuel and Mose Raphael Scholarship
 Robert H. Ray Memorial Scholarships
 Ernest R. Rechel Memorial Scholarship
 William J. Reckling Memorial Scholarship
 Randy T. Reese Memorial Scholarship
 Rice Sponsored National Merit Scholarships and National Achievement
 Scholarships
 William Marsh Rice Scholarships
 Morty Rich Community Service Scholarship
 Mrs. L. A. Richardson Scholarships
 Captain Torkild Rieber Award
 Daniel Ripley Scholarship
 Edith Ripley Scholarship
 Dwane Rivers Scholarship in Chemical Engineering
 Fred S. Roberts Scholarship
 John M. Roberts Memorial Award in Materials Science
 Carl A. Robertus and Ellen J. Robertus Scholarship in Science
 James M. and Sarah Rockwell Scholarships
 Pamela Davis Rogers Scholarship
 Catherine Withers Roper and Benjamin E. Roper Memorial Scholarship
 Volney J. Rose Scholarship
 Willie Rowell and Ruth Andrews Scholarship
 Max Roy Scholarships
 David Miller Rulfs, Jr., Scholarship
 Susan T. Scanlon Scholarship
 Roland and Claire Schmitt Scholarship
 Mr. and Mrs. Mose M. Schwartz Scholarship
 Anita and Campbell Sewall Scholarship

Leo S. Shamblin Scholarship Fund
 Lee Sharrar Scholarship
 Evelyn Slomovitz Memorial Scholarship
 William A. and Madeline Welder Smith Endowed Scholarship Fund
 Society of Rice University Women Scholarship
 Southland Paper Mills Foundation Scholarship
 Richard Steed Scholarships
 Selden D. and Virginia H. Steed Scholarship
 Stewart Memorial Scholarship
 Harriet May Stewart Endowed Scholarship Fund
 Sara Stratford Scholarship
 Nola McCarty Symms Scholarship
 Hope Pierce Tarrt Scholarship
 James U. and Margot Teague Scholarship
 Beth Turner Scholarship
 USX Foundation Scholarship
 University Scholars
 University Scholars Scholarship
 Herschel M. Vaughan Student Scholarship
 John B. Warren, Jr., Scholarship
 Abe and Rae Weingarten Scholarship
 Harris Weingarten Scholarship
 Elizabeth Aldridge Wells Scholarship
 Gordon R. West Scholarship
 Blanche White Honor Scholarship
 Charles K. and Maidie Autry Wilbanks Student Fund
 Leah Jean Benke Wilbanks Memorial Scholarship
 Dorothy Lottman Williams Scholarship
 Willoughby C. Williams Scholarship
 Eugene L. and Annie Maye Wilson Scholarship
 Homer M. Wilson, Jr., Endowed Scholarship
 Ervin Kenneth Zingler Scholarship
 Frank and Patricia Crady Zumwalt Scholarship

Awards and Scholarships in Departmental Disciplines

Architecture

Alpha Rho Chi Award in Architecture
 American Institute of Architects School Medals
 AIA/AIAF Scholarship
 Edward B. Arrants Award in Architecture
 Rosemary Watkin Barrick Traveling Fellowship
 Berda and Charles Soon Chan Memorial Scholarship
 James H. Chillman, Jr., Prizes
 John Crowder Memorial Scholarship
 William D. Darden Medal
 M. N. Davidson Fellowships
 Featherlite Scholarship in Architecture
 Margaret Everson Fossi Traveling Fellowship
 Gensler Scholarship
 Gene Hackerman Scholarship

Ralph S. Herman Memorial Scholarship
 Jameson Fellowship
 Jesse H. Jones Scholarship in Architecture
 Roderick M. Jones Scholarship
 McGinty Scholarship Fund
 John T. Mitchell Memorial Fund
 Morris R. Pitman Scholarship Fund
 Louis Sudler Prize in the Arts
 Texas Architectural Foundation Awards
 William Ward Watkin Traveling Fellowship

Art and Art History

Art Supply Award
 Kyriakouli Bitzes Scholarship
 Dawn M. Gross Award
 Jameson Fellowship for American Decorative Arts
 Mary P. B. and John W. Lovell Endowed Scholarship
 Mavis C. Pitman Memorial Prize in Art
 Christine Croneis Sayres Memorial Art Award
 Louis Sudler Prize in the Arts
 Texas Art Supply Company Award

Athletics

Pat Bailey Scholarship in Athletics
 Lester Bendix Memorial Scholarship Fund
 Robert E. and Elizabeth W. Bixby Athletic Scholarship
 Dick Brannon Scholarship in Athletics
 Hubert E. Bray Scholar Athlete of the Year
 George R. Brown Football Awards
 Emmett Brunson Award
 Jimmy Burke Memorial Scholarship Fund
 Class of 1971 Athletic Scholarship
 Tom and Patricia D. Cox Endowed Scholarship in Athletics
 Tom Crumpton Award
 Billy Ed Daniels Scholarship
 Walter W. Fondren, Jr., Memorial Scholarship
 Jim and Patti Fox Athletic Scholarship
 Larry and Karen George Athletic Scholarship
 Malcolm and Elizabeth Gillis Athletic Scholarship
 Barton and Janette Gillman Athletic Scholarship
 James W. Glanville Award
 Susanne M. and Melbern G. Glasscock Basketball Scholarship
 Susanne M. and Melbern G. Glasscock Golf Scholarship
 Mr. and Mrs. Matt Gorges Athletic Scholarship
 Gene Hackerman Award
 Gene Hackerman Scholarship for Women's Athletics
 Billy and Ruby Hale Athletic Scholarship
 David Hall Baseball Scholarship
 Lawrence A. Hamilton Endowed Scholarship
 Catherine Hannah Award
 Joyce Pounds Hardy Award
 Claude Harmon Scholarship

Ken and Sandy Hatfield Athletic Scholarship
 Carl and Kathy Isgren Athletic Scholarship
 Guy and Clare Jackson Athletic Scholarship
 Gaylord Johnson, Jr., Athletic Scholarship
 Donald N. Jordan, Jr., Athletic Scholarship
 Walter Banard Joseph and Aline L. Joseph Fund
 Kay Pearson Keating Award
 Eva Jean Lee Award
 Joe F. Lipscomb Freshman Award
 Nancy Mauney Mafrige Athletic Scholarship
 George Martin Award
 T. S. Martino Scholarship
 Leigh Masterson Award for Golf
 J. R. "Bobby" May Track Scholarship
 Harry W. McCormick Scholarship
 George Miner Athletic Scholarship Honoring Red Bale
 George Miner Athletic Scholarship Honoring Martha Hawthorne
 Dell Morgan Award
 Jess Neely Football Awards
 Neely-Davis Scholarships
 John F. Nichols Athletic Scholarship
 John Plumbley Memorial Award
 Hally Beth Poindexter Award
 Robert Pilcher Quin Award
 "R" Association Award
 Robert H. Ray Scholarship Award for Men's Basketball
 Rice University Scholar Athlete Award
 RU Honor Athlete Award
 Arthur and Karen Rogers Endowed Scholarship for Athletics
 Robby and Kathy Shelton Athletic Scholarship
 J.W. Smelley Athletic Scholarship
 Jerrol Springer Athletic Scholarship
 Stancliff Award
 Harriet May Stewart Scholarship in Athletics
 Albert M. Tomforde, Sr., Athletic Scholarship
 Stephen and Leticia Trauber Athletic Scholarship
 Mr. and Mrs. Robert B. Tudor, III, Athletic Scholarship
 Hugh C. Welsh Scholarship
 W. M. Wheless Scholarship
 Billy Wohn Award
 also
 Bing Crosby Loan Fund
 Fred Wolcott Award
 Melissa A. Woodruff Memorial Athletic Scholarship
 John L. Wortham & Sons, L.L.P., Athletic Scholarship

James A. Baker III Institute for Public Policy

Meadows Foundation Student Fellowship Fund
 Constantine S. Nicandros Public Policy Internships

Bioengineering and Bioscience

John W. Cox Research Fund for Scholarship and Fellowships in Bioengineering and Biosciences

Travel Fund in Biosciences and Bioengineering

Business Administration

E. F. "Gene" Florian Scholarship

H. H. Galloway Scholarship

Houston Society of Financial Analysts Scholarship Award

Chemistry

George Holmes Richter Memorial Fund

Bertha and Zevi Salsburg Awards

R. Howard and Elizabeth P. Wilson Endowed Scholarship

Computer Science

Torczon Scholarship

Economics

Blanche Randall Haden Scholarship

Omicrom Delta Epsilon Economics Essay Prize

Gaston V. Rimlinger Economics Essay Contest

Wall Street Journal Student Achievement Award

Ervin Kenneth Zingler Scholarship

Education

Donald I. Wood Award

Engineering

George Herder Allen Scholarship

Herbert Allen Merit Award

American Institute of Chemical Engineers, South Texas Section, Scholarship

Amoco Foundation Fellowships

R. C. Baker Foundation Scholarships

George R. Brown Scholarship

Brown Scholarships in Engineering

Buckley-Sartwelle Scholarship in Engineering

Harrianna Butler Scholarship

Alan J. Chapman Scholarship in Mechanical Engineering

Gerard A. Dobelman Memorial Scholarship

Steven G. Dobelman Memorial Scholarship

E. Baird Elfrink Memorial Scholarship

Albert Fanestiel Scholarship

Fluor Daniel Engineering Award

Gulf Foundation Scholarship

Joe M. Hamner Scholarship

Lillian Haynie Scholarship

James D. Henry Scholarship

Houston Engineering and Scientific Society Scholarship

Paul N. Howell Annual Award in Chemical Engineering

Jacobs Engineering Group, Inc., Scholarship

Charles Francis Cyrus Johnson Scholarship

A. C. Lederer, Jr., Scholarship in Civil Engineering

Paul Alois Lederer Scholarship in Civil Engineering

Mason G. Lockwood Engineering Scholarship

Walter Loewenstern, Jr., Scholarship in Engineering
 Lottman Scholarship
 William M. McCardell Endowed Scholarship
 McDermott Incorporated Scholarship
 Merritt-Gates Scholarship Fund
 Gilbert A. Metz Scholarship in Mechanical Engineering
 W. L. Moody, Jr., Scholarships in Engineering
 Thomas W. Moore Scholarship in Chemical Engineering
 Berney L. Morgan Scholarship in Mechanical Engineering
 W. H. Muery Scholarship Fund in Electrical Engineering
 NL Industries Scholarship
 National Action Council for Engineering
 National Society of Professional Engineers Scholarship
 Oshman Scholarships for Women in Engineering
 Lawrence A. Pelty and Lavine M. Pelty Scholarship in Civil Engineering
 Meg Perkins Memorial Scholarship in Engineering
 Jack C. Pollard Graduate Fellowship in Engineering
 Randy T. Reese Memorial Scholarship
 Rice Engineering Alumni Outstanding Engineering Student Awards
 Hershel M. Rich Invention Award
 Dwane M. Rivers Scholarship in Chemical Engineering
 Ford and Mimi Rogers Scholarship
 Shell Incentive Funds Scholarship
 Mr. and Mrs. Samuel T. Sikes Scholarship in Mechanical Engineering
 Samuel T. Sikes, Jr., Scholarship in Engineering
 James Redding Sims Scholarship in Civil Engineering
 Sohio Scholarship
 Gilbert Adam Stoufflet Endowed Scholarship
 Karl C. ten Brink Scholarship in Chemical Engineering
 Texaco Scholarship
 USX Foundation Scholarship
 Louis J. Walsh Scholarships/Fellowships in Engineering
 James S. Waters Creativity Award

English/Drama

Academy of American Poets Prize
 Barbara Long Chilton Scholarship
 Lady Geddes Competition in Writing
 Genevieve Parkhill Lykes Scholarship
 Susan T. Scanlon Scholarship
 George Guion Williams Prize for Excellence in Creative Writing

French

Alliance Française Scholarship
 Clyde Ferguson Bull Traveling Fellowship
 Pi Delta Phi André Bourgeois Award
 William J. Reckling Memorial Scholarship

Geology and Geophysics

Chevron Scholarship
 Devlin-Schnable Memorial Scholarship
 Leroy Caleb Gibbon Award
 Houston Geological Society Outstanding Scholar Award
 W. M. Keck Foundation Fellowship in Geology and Geophysics
 Eugen A. Merten Memorial Award
 Captain Torkild Rieber Award
 Captain Torkild Rieber Scholarship
 W. A. Tarr Certificate
 Sam P. Worden Award

German and Slavic Studies

Max Freund Prize in German
 Earl Douglas Mitchell Fellowship

History

Kyriakouli Bitzes Scholarship
 Mary Hayes Ewing Publication Prize in Southern History
 Charles Garside Memorial Award in History
 Jameson Fellowship
 Barbara Field Kennedy Prize in American History
 Clifford Lefton Lawrence Award in British History
 Captain Charles Septimus Longcope Award
 Susie Smith Vandiver Scholarship
 Willoughby C. Williams Scholarship

Human Performance and Health Sciences

G. L. Hermance Award in Physical Education
 Jill Pitman Jones Award

Humanities

Catherine Goodrich Fay Scholarship
 Josephine Brummett Muller Scholarship

Italian

Italy in America Association of Houston Summer Scholarship
 Donne Di Domani Scholarship
 Enrico Caruso Award

Managerial Studies

Andersen Consulting Award in Managerial Studies
 H. Russell Pitman Award in Managerial Studies
Wall Street Journal Student Achievement Award

Mathematical Science

Torczon Scholarship

Mathematics

Hubert E. Bray Prize in Mathematics
 Frank Jones Scholarship in Mathematics

Robert David Maurin Scholarship in Mathematics
 Willoughby C. Williams Scholarship

Military Science

American Legion for General Military Excellence Awards
 American Legion/Andrew Jackson Memorial Award
 Houston Chamber of Commerce Military Affairs Committee Award
 Armed Forces Communications and Electronics Association Award
 Reserve Officer Association Award Scholarship
 Society of American Military Engineers Award
 Society of American Military Engineers William S. Bailey Scholarship
 Sons of the American Revolution Scholarship

Music

Ralph A. Anderson Scholarship for Chamber Music
 William N. Barnard Memorial Fund
 Cecilia Bartoli Scholarship in Music
 Edward J. and Frances Bing Memorial Scholarship
 Alice Winston Carter Music Scholarship
 Dr. Leon Clark Endowed Scholarship Fund
 Compaq Computer Corporation Scholarship
 Paul E. Craven Scholarship
 Denson Endowed Scholarship for Percussion
 Elva Kalb Dumas Prize in Music
 Lillian H. Duncan Prize in Piano
 Armando Ghitalla Scholarship
 Frederick Royal Gibbons Memorial Award
 William E. and Elva F. Gordon Scholarship
 Erwin and Emily Heinen Prize in Music
 Winifred and Maurice Hirsch Memorial Scholarship Fund
 Katie Walter Hubert Scholarship
 Mr. and Mrs. C. M. Hudspeth Violin Scholarship
 Carl and Lillian Illig Scholarship
 Henry and Betty Jackson Scholarship
 Mary Gibbs Jones Endowed Scholarship
 Mary Root Kirkland Prize in Voice
 Gwendolyn Jaster Lederer Scholarship in Piano
 Larry J. Livingston Prize in Violin
 Bertha Mallard Scholarship for Music Composition
 Willie M. Muery Scholarship in Music
 Dr. Joseph A. and Ida Kirkland Mullen Scholarship
 Sallie Shepherd Perkins Prize in Music
 Sara Meredith Peterson Scholarship
 Burt Duke Raiza Prize in Piano
 Rex Shanks, Jr., Memorial Scholarship in Music
 Shepherd Society Awards and Scholarships
 Samuel Morris Slack Music Scholarship in Brass
 Dorothy Richard Starling Scholarships in Violin
 William H. Vernor, Jr., Scholarship
 Logan C. and Ione G. Waterman Scholarship Fund
 Eula and David Wintermann Scholarship

Naval Science

American Defense Preparedness Association Scholarship (ADPA)
 Armed Forces Communications and Electronics Association Awards
 Chief of Naval Education and Training Scholarship (CNET)
 Distinguished Naval Graduate Award
 Mary Henry Gibson Scholarship
 Jesse H. Jones Naval Scholarship—A. A. Vandergrift
 Jesse H. Jones Naval Scholarship—W. M. Halsey
 Commander F. C. Johnson Award
 Military Affairs Committee, Houston Chamber of Commerce Award
 Navy League Award
 Reserve Officers Association Award
 C. Grady Smith Memorial Award
 Society of American Military Engineers Award
 Texas Society—Sons of the American Revolution Award
 United Services Automobile Association Scholarship Award
 United States Naval Academy Alumni Association Award

Philosophy

Jacob and Babette Atlas Prize in Moral Philosophy
 Frank Moser and Professor R. A. Tsanoff Scholarship
 Hilda Atlas Rich Scholarship
 Tsanoff Undergraduate Essay Prizes

Physics

Tom W. Bonner Prize in Physics
 Claude W. Heaps Prize in Physics

Political Science

Charles Breckenridge Parkhill Scholarship in Political Science

Religious Studies

Aparicio Prize
 Edith Jo Leeseman Dissinger Scholarship

Rice Institute for Policy Analysis

Shell Scholar in Public Policy

Science

H. Gordon Davis and Bernice Davis Memorial Scholarship Fund
 J. E. Foster Scholarship in Science
 Lillian and Carl Illig Scholarships
 Meg Perkins Memorial Scholarship in Science

Sociology

Walter and Helen Hall Prize
 Weber-Durkheim Prize for Excellence in Sociology

Space Physics

A. J. Dessler Undergraduate Scholarship
 The William and Elva Gordon Graduate Fellowship
 The William F. Marlar Graduate Scholar

Spanish, Portuguese, and Classics

Barzan Scholarship for Summer Study Abroad
 Ruth Lee Kennedy Fellowship for Studies in the Golden Age of Spanish Literature
 Sacks Scholarship for Summer Study Abroad
 Summer Program in Spain Scholarship
 Tsanoff Scholarship for Summer Study Abroad
 Robert Wells Scholarship for Summer Study Abroad

College Awards

Marie Alexander Leadership Award
 Athenian Awards
 Donald R. Baker Scholarships
 H. E. Bray Freshman Award
 Franz and Frances Brotzen Award
 Daniel M. Caesar Memorial Award
 Patrick Gordon Memorial Award
 Joe M. Hamner Scholarship
 J. Dennis Huston Sports Award
 Jones College Scholarships
 Jones Master and President Award
 Margaret J. Jordan Endowment Fund
 Leeds Award for Excellence in Scholarship
 Alan A. Lewis Memorial Scholarship
 Geoffrey James Norris Memorial Scholarship
 John E. Parish Fellowship
 Richardson College Master's Award for Excellence in Scholarship
 Z. W. Salsburg Award
 Jackie Schnell Memorial Scholarship
 Graham C. Stebbings College Service Award
 Corrinne and Radoslav Tsanoff Sophomore and Junior Prizes
 Harry Carothers and Olga Keith Wiess Scholarship
 Olga Keith Wiess Award
 Barbara Bennett Willis Scholarship
 S. P. Worden Endowment for Will Rice Award

In addition to the above awards, Rice is invited to nominate students for several scholarships and fellowships that provide funds for foreign study and travel or later graduate work. Final selections for these awards are made nationally or regionally.

Ora N. Arnold Travel Fellowship
 Edwin, Frederick, and Walter Beinecke Memorial Scholarship
 Franz and Frances Brotzen Travel Award
 Churchill Scholarships
 Danforth Fellowships
 Fulbright-Hays Scholarships
 Goliard Travel Scholarship
 Latin American Scholarship Program of American Universities, Inc. (LASPAU),
 Scholarships
 Henry Luce Scholarships
 Marshall Scholarships (British)
 Rhodes Scholarship (British)
 Sherman, Texas, Travel Award
 Harry S. Truman Scholarships

Thomas J. Watson Fellowships
 Woodrow Wilson Doctoral Dissertation Fellowship in Women's Studies
 Zonta International Amelia Earhart Aerospace Award

Honor Societies

Honor societies at Rice include the following:

Phi Lambda Upsilon—national honorary chemical society promoting high scholarship and original investigation in all branches of pure and applied chemistry (Rice chapter: 1926)

Phi Beta Kappa—founded in 1776 at the College of William and Mary to recognize intellectual achievement and the love of learning among students in the liberal arts and sciences (Rice chapter: March 1, 1929)

Pi Delta Phi—organized to interest French students in competing for high standing in scholarship (Theta chapter at Rice: May 1930)

Society of Sigma Xi—for the promotion of research in science (Beta of Texas chapter at Rice: March 23, 1938)

Tau Beta Pi Association—organized to interest engineering students in competing for high standing in scholarship (Gamma of Texas chapter at Rice: December 18, 1940)

Delta Phi Alpha—to promote an interest in the German language and literature (Gamma Xi chapter at Rice: April 1949)

Sigma Delta Pi—to promote an interest in the Spanish language and literature (Rice chapter: May 14, 1953)

Tau Sigma Delta—national honor society in architecture and applied arts (Tau chapter at Rice: May 7, 1961)

Eta Kappa Nu—founded in 1904 at the University of Illinois for electrical engineering students, to stimulate and reward scholarship as well as assist and encourage its members to grow professionally throughout their lives (Rice chapter: January 1981)

Omicron Delta Epsilon—to promote study in economics (Rice chapter: 1981)

Psi Chi—founded in 1929 at Yale University to encourage, stimulate, and maintain excellence in scholarship and to advance the science of psychology (Rice chapter: April 23, 1990)

Undergraduate Student Life

Residential Colleges

All undergraduate students at Rice, whether they live on campus or not, are members of one of eight residential colleges. All colleges are coeducational.

Each college has faculty masters who live in a house next to the college. Answering to the president of the university, the masters have overall responsibility for all aspects of student life in the college, especially for encouraging broad cultural and intellectual interests and for promoting self-discipline and effective self-government within the college. Upon agreement, the students and masters invite other members of the Rice faculty to become resident and nonresident associates of the college. Faculty associates act as advisers to the students and participate in the various activities of the college.

Colleges also have nonfaculty university associates and community associates drawn from various professions in the Houston area.

Each college exists as a self-governing group of students. The elected officers and representatives are responsible to the masters and to the college membership for:

- Directing the college's cultural, social, and athletic activities
- Expenditure of college funds
- Maintaining order in the college

While uniformity among the colleges has never been sought and each college has developed its own particular interests and character, all seek to foster fellowship among their members and a mature sense of honor, responsibility, and sound judgment.

College Assignment. Each undergraduate, upon acceptance by the university, is designated a member of one of the colleges. Two students entering Rice for the first time may request assignment to the same college, but they may not designate which college. New students may also request membership in the same college as a close relative. Except for these cases, students have no individual choice of college.

Room and Board. College buildings include a dining hall and public rooms, which are available to both resident and nonresident members, and living quarters for approximately 215 students from all classes and all academic disciplines.

At present, Rice has room in its on-campus residential colleges for about 65 percent of its undergraduate students. Although most of the students who want to live in the colleges can be accommodated, demand usually exceeds the available number of rooms. The university makes every effort to provide housing in the colleges for all incoming first-year students who wish to live on campus, but space cannot be guaranteed. Continuing students draw for rooms according to the priority system established in each college. No student is required to live on campus. However, those members of the colleges who live off campus are encouraged to eat in their colleges and to participate in college activities.

The College Food Service provides à la carte meals with the exception of prepaid dinners. Its other services include:

- Assistance with special diets prescribed by a physician
- Sack lunches for students who must miss a meal due to a job conflict
- Sick trays for students when requested by the Student Health Service
- Alternate menu entrées, whenever possible, to accommodate students' religious practices

For more information on room and board, see Living Expenses (pages 49-50).

College Courses. One of the colleges' important activities is their sponsorship of courses and workshops open to all students. By expanding course offerings outside the traditional departments, college courses promote the academic involvement of the colleges while introducing students to interdisciplinary topics of particular interest.

Students propose college courses during the semester before they are offered. Once approved by the masters and faculty associates of the college and by the vice president for student affairs, these college courses are offered for academic credit on the same basis as departmental courses. The registrar provides a list of college courses each semester during preliminary registration.

College workshops, generally providing instruction in practical skills, carry no academic credit and do not appear on a student's permanent record. They may meet regularly throughout the semester or within a limited time as short courses.

Student Government

All undergraduates are members of the Rice Student Association, which is governed through the Student Senate. The senate includes the president, two vice presidents, the secretary, the treasurer, the eight college presidents, and eight college senators.

Alleged violations of university or college rules are handled in accordance with the Code of Student Conduct. In most cases, original jurisdiction belongs to student courts. Students may appeal verdicts to the college masters, the assistant dean for student judicial programs, or the Judicial Affairs Committee, as appropriate. Final appeal is to the vice president for student affairs. The student-staffed Honor Council conducts hearings and trials for alleged offenses against the honor system (see page 7). Rice retains ultimate authority in all matters of discipline and over all actions that affect its educational function or the safety and well-being of members of the university community.

Award Presentations. The Rice Student Association annually presents two coveted awards, one to a student and one to a faculty or staff member. The Rice Service Award, a memorial to Hugh Scott Cameron, first dean of students at Rice, is awarded to currently enrolled or former members of the association who have rendered distinguished service to the student body. The Mentor Recognition Award recognizes extraordinary service to the student body by a current member of the faculty or staff. A committee of faculty and students appointed by the association makes the selections.

Office of Student Activities

The Office of Student Activities, located in the Rice Memorial Center cloisters, oversees the activities of various campuswide student organizations. It also handles senior rings, student requests for facilities, and party permits, and it coordinates leadership development programs, including the annual leadership retreat and symposium.

Major student organizations include the following:

- Rice Student Association, the student governing body
- Rice Program Council, which sponsors various events of current interest to the student body as well as social functions
- KTRU, the student-run radio station, operating 24 hours, seven days a week, on 91.7-FM
- Student publications (e.g., *Rice Thresher*, the student newspaper; *Campanile*, the yearbook; and *University Blue*, a literary and visual arts publication)

A large number of student organizations address special student interests, such as the Black Student Association, the Hispanic Association for Cultural Education at Rice, the Chinese Student Association, Rice Young Democrats, and Rice Republicans. There are also numerous clubs for such sports as sailing, rugby, lacrosse, volleyball, and soccer. Other special-interest groups include a premed society, forensic society, juggling club, and vegetarian club.

Many organizations are associated with special academic and professional disciplines, such as foreign language clubs, honor societies, and student affiliates of the American Chemical Society, the American Society of Civil Engineers, and the American Society of Mechanical Engineers.

The Rice Players, an extracurricular theater group of Rice students, faculty, and staff, present at least four productions each year and welcome participation by anyone

interested in any aspect of theater production or management.

Rice students also maintain affiliations with a number of religious organizations. These include, but are not limited to, the Baptist Student Union, Canterbury Association, Catholic Student Association, Christian Science Organization, Hillel Society, Lutheran Student Association, Intervarsity Christian Fellowship, and the Wesley Foundation. Many of these clubs are assisted by local clergy who form the Joint Campus Ministry.

A Student Organizations Office on the second floor of the Ley Student Center houses mailboxes for all student organizations.

Community Involvement Center/Rice Student Volunteer Program

Housed in the cloisters of the Rice Memorial Center, the Community Involvement Center works to develop a culture of service within the university by functioning as an advocate for community service, social responsibility, and an increased awareness of social and community issues. The center acts as a clearinghouse for resources and referrals involving local, national, and international community agencies and service opportunities. By making educational programs and information available, the center fosters a lifelong commitment to service among students, faculty, and staff. It also organizes alternative semester break service trips, volunteer fairs, beach cleanups, and other activities. The 10 student service organizations supported by the Community Involvement Center include Rice Habitat for Humanity, youth mentoring and tutoring programs, tutoring in English as a second language, Best Buddies, and the Rice Student Volunteer Program.

By heightening student awareness of community needs and generally raising social consciousness, the Rice Student Volunteer Program (RSVP) has organized volunteer projects for Rice students, faculty, and staff since 1985. The largest event of each semester is Outreach Day, a Saturday when approximately 500 students volunteer in more than 30 nonprofit agencies throughout the Houston area, learning how to take thoughtful action to build a stronger, more just community. With an office in the cloisters of the Rice Memorial Center, RSVP invites each student's involvement, as an officer, a college representative, a committee member, a project organizer, or an interested participant in any RSVP event.

Intercollegiate Speech and Debate

Consistently ranked in the top 10 nationally, the George R. Brown Forensic Society sponsors competition in the categories of Individual Events, Lincoln-Douglas, and Parliamentary Debate. The society provides students with the chance to hone their public speaking skills and to qualify for competition both at the American Forensic Association National Individual Events Tournament and at the National Parliamentary Debate Championships. Recognizing the importance of developing strong communication skills, the society has an open admissions policy, inviting students with little or no previous experience as well as those with extensive high school backgrounds to become members of one of the most successful teams at Rice.

*Information for
Graduate Students*



Introduction

Since Rice opened in 1912, the university has recognized the importance of graduate study and research as a principal means of advancing knowledge. The first Doctor of Philosophy degree was awarded in 1918 in mathematics. Since that time, the graduate area has expanded to encompass the various schools of natural sciences, the humanities, engineering, social sciences, architecture, music, and administration, as well as interdepartmental areas. The number of graduate programs has steadily increased over time, and Rice now offers advanced degrees in 33 fields of study.

Graduate programs lead to either research or professional degrees. Research programs generally require the completion of a publishable thesis that represents an original and significant contribution to the particular field of study. Research degrees include the Doctor of Philosophy (Ph.D.), Doctor of Architecture (D.Arch.), Master of Arts (M.A.), and Master of Science (M.S.).

Professional programs provide advanced course work in several disciplines but do not generally include independent research. They lead to the degrees of Doctor of Musical Arts (D.M.A.), Master of Architecture (M.Arch.), M.Arch. in Urban Design, Master of Arts in Teaching (M.A.T.), Master of Business Administration (M.B.A.), Master of Chemical Engineering (M.Ch.E.), Master of Computational and Applied Mathematics (M.C.A.M.), Master of Civil Engineering (M.C.E.), Master of Computer Science (M.C.S.), Master of Electrical Engineering (M.E.E.), Master of Environmental Engineering (M.E.E.), Master of Environmental Science (M.E.S.), Master of Materials Science (M.M.S.), Master of Mechanical Engineering (M.M.E.), Master of Music (M.Mus.), and Master of Statistics (M.Stat.).

All degrees conferred by the university are awarded solely in recognition of educational attainments and not as warranty of future employment or admission to other programs of higher education.

Graduate Degrees

Research Degrees

Ph.D. Programs. The Ph.D. degree is awarded for original studies in the departments listed in the Graduate Degree Chart (pages 74-75); in architecture, the equivalent degree is the D.Arch. Candidates receive a Ph.D. degree after successfully completing at least 90 semester hours of advanced study and concluding an original investigation that is formalized in an approved thesis. As final evidence of preparation for this degree, the candidate must pass a public oral examination. (See also Candidacy, Oral Examinations, and the Thesis on pages 78-79 and 82-83.) The residency requirement for the doctorate is four semesters of full-time study at the university.

Master's Programs. The M.A. degree is available in the departments listed in the Graduate Degree Chart (pages 74-75), including certain scientific fields of study. The M.S. degree is offered in the engineering and science fields also listed in the chart. Candidates may undertake the M.Arch., M. Arch. in Urban Design, and M.Mus. degrees as research degrees by adopting the thesis option. Candidates receive a master's degree after completing at least 30 semester hours of study (including thesis hours), 24 hours of which must be taken at Rice. The minimum residency requirement is one semester of full-time study.

Master's programs generally require original work reported in a thesis and a public examination. Most students take three or four semesters to complete a master's degree (some programs may require more time). In certain departments, students may receive a master's degree when they achieve candidacy for the doctoral degree. Students seeking a master's degree in this way must submit a petition for the degree, signed by their department chair, to the Office of the Vice Provost for Research and Graduate Studies before February 1 of the year in which the degree is to be awarded. (See also Candidacy, Oral Examinations, and the Thesis on pages 78-79 and 82-83.)

Both Research Degree Programs. For general information on advanced degree work at Rice, see Requirements for Graduate Study (pages 77-78). The individual departments establish foreign language requirements for the master's and doctoral degrees according to the need for foreign languages when conducting research and scholarship in their respective fields. Specific requirements for advanced research degrees in each field of study appear, listed by department, in the Departments and Interdisciplinary Programs section. Students seeking additional material should contact the appropriate department chair (see Department Information Chart on pages 79-81).

Professional Degrees

Rice University offers advanced degree programs to prepare students for positions in a number of professional fields. The professional degrees listed in the Introduction (page 72) appear in the Graduate Degree Chart (pages 74-75). In some departments, the professional degree also prepares the student for a doctoral-level program. All professional degrees are master's degrees with one exception: candidates earn the nonthesis D.M.A. after concluding a program of advanced music study, which includes completing the required performances or original compositions (if the field of emphasis is composition, students present a major work as a thesis).

For general information on advanced degree work at Rice, see Requirements for Graduate Study (pages 77-78). Requirements for professional degrees include the successful completion of 30 semester hours or more of upper-level courses (at the 300 level or higher) with at least 24 hours taken at Rice. Additional information and specific requirements for individual degrees appear, listed by department, in the Departments and Interdisciplinary Programs section. Program information and application materials are also available from the department chairs (see Department Information Chart on pages 79-81).

Separate Standing. Admission into a professional program is granted separately from admission into a research or thesis program. Students who wish to change from a thesis program to a professional degree program must obtain the specific approval of the Office of Graduate Studies. The office does not normally grant approval to students who have received university graduate fellowships unless they can show that they have performed a significant service for the university or its faculty through either teaching or research. Professional degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a professional program must reapply for admission into a research program.

GRADUATE DEGREE CHART

School Department	Graduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
JESSE H. JONES GRADUATE SCHOOL OF ADMINISTRATION		
	M.B.A., M.B.A./ Master of Engineering	Accounting, entrepreneurship, finance, general management, international business, management information systems, marketing, operations management, organizational behavior and human resource management, public and nonprofit management, and strategic management and planning; joint nonthesis degree option with all engineering disciplines listed above
SCHOOL OF ARCHITECTURE		
	M.Arch., M.Arch. in Urban Design, D.Arch.	
GEORGE R. BROWN SCHOOL OF ENGINEERING		
Chemical Engineering	M.Ch.E., M.S., Ph.D.	Biochemical engineering, reservoir engineering, process control, optimization and systems analysis, applied mathematics, materials science kinetics, pollution control, and catalysis
Civil Engineering	M.C.E., M.S., Ph.D.	Structural dynamics, structures and mechanics, reinforced and prestressed concrete, geotechnical engineering, computer-aided engineering, probability and random vibrations, and solid mechanics
Computational and Applied Mathematics	M.C.A.M., M.C.S.E., M.A., Ph.D.	Numerical analysis, computational science, operations research, and physical mathematics; additional program in computational science and engineering (see Interdepartmental Programs)
Computer Science	M.C.S., M.S., Ph.D.	Algorithms and complexity, artificial intelligence and robotics, compilers, distributed and parallel computation, graphics and visualization, operating systems, and programming languages
Electrical and Computer Engineering	M.E.E., M.S., Ph.D.	Bioengineering, communication, control, electro-optics, physical electronics, computer science, and computer engineering
Environmental Science and Engineering	M.E.E., M.E.S., M.S., Ph.D.	Environmental science: environmental biology, chemistry, toxicology, geology, and planning; surface and groundwater hydrology; and water and wastewater treatment. Environmental engineering: hydrology and water resources engineering; water and wastewater treatment, design, and operation; and numerical modeling
Mechanical Engineering and Materials Science	M.M.E., M.M.S., M.S., Ph.D.	Mechanical engineering: thermal sciences, energy conversion, gas dynamics, hydrodynamics, computer-aided design, stress analysis and mechanical behavior of materials, robotics and control, and aerospace engineering
Statistics	M.Stat., M.A., Ph.D.	Applied probability, biomathematics, data analysis, density estimation, epidemiology, image processing, model building, quality control, statistical computing, stochastic processes, and time series analysis
SCHOOL OF HUMANITIES		
Art and Art History	M.A.	History of art; options in classical archaeology and media studies
Education	M.A.T.	Secondary teaching certificate in conjunction with B.A. in major field
English	M.A., Ph.D.	British and American literature and literary theory

School Department	Graduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
SCHOOL OF HUMANITIES (continued)		
French Studies	M.A., Ph.D.	French literature, language, and culture
German and Slavic Studies	M.A., Ph.D.	German and German cultural studies
Hispanic and Classical Studies	M.A.	Spanish language and literature
History	M.A., Ph.D.	U.S., European, and other history
Human Performance and Health Sciences	No graduate degree offered	
Linguistics	Ph.D.	Anthropological, applied, cognitive, field, functional or discourse, and English, German, or Romance linguistics; second language acquisition; and language typology and universals
Philosophy	M.A., Ph.D.	Specialization in medical ethics
Religious Studies	M.A., Ph.D.	Asian religions (M.A. only), Biblical studies, ethics, history of Christianity, philosophy and religious thought, and psychology of religion; additional specialization in health care ethics
SHEPHERD SCHOOL OF MUSIC		
	B.Mus./M.Mus., M.Mus., D.M.A.	Composition, choral and instrumental conducting, historical musicology, performance, and music theory
WIESS SCHOOL OF NATURAL SCIENCES		
Biochemistry and Cell Biology	M.A., Ph.D.	Biochemistry, biophysics, genetics, molecular biology, development, cell biology, plants, and neurobiology
Chemistry	M.A., Ph.D.	Organic chemistry, inorganic chemistry, and physical chemistry
Ecology and Evolutionary Biology	M.A., Ph.D.	
Geology and Geophysics	M.A., Ph.D.	Stratigraphy, sedimentation, paleoclimate, geophysics, geodynamics, global plate tectonics, geochemistry, igneous and metamorphic petrology, marine geology and oceanography, structural geology, and rock mechanics
Mathematics	M.A., Ph.D.	Differential geometry, ergodic theory, partial differential equations, probability, real analysis, mathematical physics, complex variables, and geometric and algebraic topology
Physics	M.A., Ph.D.	Atomic and molecular physics, biophysics, particle physics, condensed matter physics, surface physics, and theoretical physics
Space Physics and Astronomy	M.S., Ph.D.	Space physics, astronomy, and applied physics
SCHOOL OF SOCIAL SCIENCES		
Anthropology	M.A., Ph.D.	Archaeology and social/cultural anthropology
Economics	M.A., Ph.D.	Econometrics, economic development, economic theory, industrial organization and regulation, international trade and finance, labor, macroeconomics/monetary theory, and public finance
Political Science	M.A., Ph.D.	American government, comparative government, and international relations
Psychology	M.A., Ph.D.	Cognitive-experimental psychology, industrial-organizational/social psychology, and engineering psychology

INTERDEPARTMENTAL AND COOPERATIVE PROGRAMS CHART

Program	Degrees Offered	Departments/Areas of Concentration
INTERDEPARTMENTAL PROGRAMS		
Systems Theory	Master's, Ph.D.	Departments in chemical engineering, economics, electrical and computer engineering, and mathematics
Solid-State Electronics	Master's, Ph.D.	Departments in chemistry, electrical and computer engineering, mechanical engineering, and physics
Materials Science and Engineering	Master's, Ph.D.	Departments in chemistry, electrical and computer engineering, mechanical engineering, and physics
Applied Physics	Master's, Ph.D.	Departments in chemistry, electrical and computer engineering, mechanical engineering and materials science, physics, and space physics and astronomy; sciences that underlie important new and emerging technology. Contact: Rice Quantum Institute (713) 527-6028
Computational Science and Engineering	Master's, Ph.D.	Modern computational techniques and use of powerful, new computers in research, development, and design. Contact: one of the departments in computational and applied mathematics, biochemistry and cell biology, geology and geophysics, computer science, chemical engineering, electrical and computer engineering, and statistics
COOPERATIVE PROGRAMS		
Joint Program in Computational Biology	Training opportunities for Ph.D. students	Research in a lab setting, seminars and workshops, and access to advanced resources of W. M. Keck Center for Computational Biology (fellowships available); with Baylor College of Medicine and the University of Houston. Contact: (713) 527-4752 or <bioc@rice.edu>.
Joint Programs in History and Law	M.A./law degree	Combined law degree and M.A. in legal and constitutional history; with University of Houston Law Center and the Thurgood Marshall School of Law at Texas Southern University
Joint Programs with Medical Colleges	M.D./Ph.D., M.D./M.A., M.D./M.S.	Combined M.D. and advanced research degree for research careers in medicine; with Baylor College of Medicine and the University of Texas Medical School
Joint Program in Biomedical Ethics	M.A., Ph.D.	Religious studies degree with the University of Texas Health Science Center at Houston; philosophy degree with the Baylor College of Medicine and the Institute of Religion

Interdepartmental and Cooperative Programs

Opportunities for graduate study are available in a number of interdisciplinary areas. The advanced degree programs listed in the Interdepartmental and Cooperative Programs Chart (above) are administered by the participating Rice departments. They represent fields of study in rapidly developing areas of science and engineering or those areas subject to multiple investigations and interests. Rice has also established ties with other Houston universities and the Texas Medical Center to enable graduate students to receive training in computational biology research, to earn separate degrees simultaneously, or to focus their doctoral study on the specialized field of medical ethics.

Admission to Graduate Study

Graduate study is open to a limited number of extremely well-qualified students with a substantial background in their proposed field of study (this usually, though not always, means an undergraduate major in the field). Each department determines whether applicants have enough preparation to enter a given program, emphasizing the quality of their preparation rather than the particular academic program they completed or the credits they earned.

Applicants for admission to graduate study should contact the chair of the appropriate department for application forms and relevant information about the program. The Department Information Chart (pages 79-81) lists department chairs with department phone/fax numbers and e-mail addresses. Applicants should send all application materials, including transcripts and test scores, to the department chair.

Application Process. An application for graduate study should include the completed application form, the application fee, transcript(s), recommendations, and writing samples, if required. Some departments require scores on the aptitude portion of the Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT) and an appropriate advanced test; these should be sent directly to the admitting department.

To make sure scores are available when admission decisions are normally made, applicants should take the GRE by the December before the fall for which they are applying. The application deadline for the fall semester is February 1 (March 1 for M.B.A. applicants). Some departments, however, may specify an earlier deadline, and departments may occasionally consider late applications.

Admission depends on students' previous academic records, available test scores, and letters of reference from scholars under whom they have studied. Writing samples, portfolios, or statements of purpose may also be required. In general, applicants should have at least a 3.00 (B) grade point average in undergraduate work and high scores on the GRE (or GMAT). Foreign applicants whose native language is not English must take the TOEFL test and score 600. Department committees make initial decisions on admission, then send their recommendations to the Office of Graduate Studies for review. Only the vice provost for research and graduate studies or designee may make official offers of admission.

Academic Regulations

Requirements for Graduate Study

Graduate students must meet the following minimums, deadlines, and course or grade requirements to graduate in good standing from the university:

Residency—Masters students must spend at least one semester and Ph.D. students must spend at least four semesters in full-time study at Rice.

Full-time study—Semester course load for full-time students is 9 hours, or more as required by specific departments. Graduate programs at Rice generally require full-time study.

Part-time study—Admission of part-time students requires special permission and departmental recommendation. Part-time students occasionally are admitted but usually for nonthesis programs only.

Time to degree—Ph.D. students are required to complete their program, including thesis defense, within ten years of initial enrollment. Masters students are required to complete their program, including thesis defense, within five years of initial enrollment. In both cases, students have a limit of one additional year from the date of defense to deposit their theses in the Office of Graduate Studies. These time bounds include any period in which the student was not enrolled, for whatever reason.

Minimum hours—Students must register for at least 3 hours in a semester.

Courses—Students plan their first semester of study with the department chair or an officially designated faculty member, affiliating as soon as possible with a faculty adviser who then helps them plan a full course program as well as the thesis or special report. Students may register for courses of study and drop or add courses only with the approval of this adviser or the department chair.

Deadlines—Students must observe all deadlines listed in the Academic Calendar (pages 204-205).

Grades—Students must achieve at least a B- (2.67) grade point average in courses counted toward the graduate degree. Some programs and departments have more stringent standards. To compute grade point averages, the credit attempted in semester hours for each course and the points for the grade earned (from A = 4.00 to F = 0.00) are multiplied, then the products (one for each course) are added together and the sum is divided by the total credits attempted.

Pass/fail—All students, except Class III students, may take courses pass/fail, but only with department approval. The total courses taken pass/fail may not exceed the total full years of residence, and students may register for only one such course in a semester. They must file a course as pass/fail no later than the end of the tenth week of classes; they may later convert a pass/fail course to a graded course by filing with the registrar.

Departmental duties—In most research degree programs, students must undertake a limited amount of teaching or perform other services as part of their training. Assigned duties should not entail more than 10 hours per week, averaged over the semester, or extend over more than eight semesters.

Outside employment—Full-time students may accept other employment only with the approval of the department and the Office of Graduate Studies. Students working elsewhere for more than 20 hours per week are not normally eligible for full-time status.

Continuous enrollment—Students must maintain continuous program involvement and enrollment unless granted an official leave of absence.

Candidacy, Oral Examinations, and the Thesis

Approval of Candidacy. Candidacy marks a midpoint in the course of graduate education. Achieving candidacy implies that a graduate student has: (a) completed required course work, (b) passed required exams to demonstrate his/her comprehensive grasp of the subject area, (c) demonstrated the ability for clear oral and written communication, and (d) shown the ability to carry on scholarly work in his/her subject area. Students enrolled in research degree programs submit their petitions for candidacy for a master's or doctoral degree through the department chair to the vice provost for research and graduate studies. In the petition sent to the vice provost, the department chair identifies the student's thesis director, recommends a thesis committee, certifies that the applicant has fulfilled the departmental requirements, and provides a transcript as evidence that work completed within the department is of high quality.

Students must file their applications for approval of Ph.D. candidacy in the Office of Graduate Studies before December 15 and for approval of M.A./M.S. candidacy before February 1 of the academic year they expect to graduate. Students may take the

final oral examination in defense of their thesis only after the vice provost for research and graduate studies approves their candidacy. Ph.D. students must be approved for candidacy before the beginning of the ninth semester of their residency at Rice. Master's students must be approved for candidacy before the beginning of the fifth semester of their residency at Rice.

DEPARTMENT INFORMATION CHART

Department Chair	Phone, Fax, and E-Mail	Faculty Research Interests
JESSE H. JONES GRADUATE SCHOOL OF ADMINISTRATION		
Accounting and Administrative Science: Gilbert R. Whitaker, Jr. (Dean)	(713) 527-4838 fax: (713) 285-5251 enterjgs@rice.edu	Market reaction to accounting changes, managerial accounting, financial reporting, accounting standard setting in different countries, capital market effects of accounting information, corporate governance, management strategy, decision making, corporate finance, securities markets, market anomalies, managerial communication, marketing strategy, customer satisfaction, sales promotion policy, computer-human interface, international business and trade, business-government relationships
SCHOOL OF ARCHITECTURE		
Lars Lerup (Dean)	(713) 527-4044 fax: (713) 285-5277 arch@rice.edu	Architecture, design, urbanism, theory and practice
John J. Casbarian (Associate Dean)	(713) 285-5152	Architecture design and practice
GEORGE R. BROWN SCHOOL OF ENGINEERING		
Bioengineering: Larry McIntire	(713) 285-5961 bioeng@rice.edu	Biochemical engineering, biological systems modelling, biomaterials, biomedical lasers, cellular and molecular engineering, controlled release technologies, metabolic engineering, spectroscopy, systems engineering and instrumentation, thrombosis, tissue engineering, and transport processes
Chemical Engineering: Joe Hightower	(713) 527-4902 ceng@rice.edu	Thermodynamics and phase equilibria, chemical kinetics and catalysis, optimization, stability and process control, rheology and fluid mechanics, polymer science, biomedical engineering, enhanced oil recovery and cleanup of ground-water aquifers, biochemical reactor engineering
Civil Engineering: Ahmad Durrani	(713) 527-4949 fax: (713) 285-5268 civi@rice.edu	Structural and foundation dynamics (e.g., earthquake and offshore engineering), reinforced and prestressed concrete structures, application of probability theory to structural dynamics, experimental studies of structures, geotechnical engineering, and computer-aided engineering
Computational and Applied Mathematics: Danny Sorensen	(713) 527-5627 fax: (713) 285-5318 caam@caam.rice.edu	Operations research, mathematical programming, discrete and continuous optimization, numerical linear algebra, flow in porous media, computational seismology, optimal design, partial differential equations, numerical analysis
Computer Science: Moshe Y. Vardi	(713) 527-4834 fax: (713) 285-5930 comp@rice.edu	Algorithms and complexity, artificial intelligence and robotics, compilers, distributed and parallel computation, graphics and visualization, operating systems and programming languages

Department Chair	Phone, Fax, and E-Mail	Faculty Research Interests
Electrical and Computer Engineering: Robert Jump	(713) 527-4020 fax: (713) 524-5237 elec@rice.edu	Bioengineering, computer systems engineering, quantum electronics, semiconductor devices, communications, control, systems, robotics
Environmental Science and Engineering: Philip Bedient	(713) 527-4952 fax: (713) 285-5203 envi@rice.edu	Surface and groundwater hydrology, biochemical process engineering, aquatic chemistry, environmental microbiology, physical-chemical processes, GIS and contaminant transport modeling, earth systems, environmental law
Mechanical Engineering and Materials Science: TBA	(713) 527-4906 mems@rice.edu	Theoretical and rock mechanics, heat transfer, biomedical engineering, fluid dynamics, optimization theory, materials science, aeronautics and astronautics
Statistics: Marek Kimmel	(713) 527-6032 fax: (713) 285-5476 stat@rice.edu	Applied probability, biomathematics, data analysis, density estimation, epidemiology, image processing, model building, quality control, statistical computing, stochastic processes, time-series analysis
SCHOOL OF HUMANITIES		
Art and Art History: Katherine Drew (acting)	(713) 527-4668/4815 fax: (713) 527-4039 arts@rice.edu	Art history: Greek and Roman art and archaeology, early Christian through 20th-century European art, American art
Education: Raymond Wells	(713) 527-4826 fax: (713) 285-5459 educ@rice.edu	Secondary education
English: Walter Isle	(713) 527-4840 fax: (713) 285-5991 engl@rice.edu	Medieval through 20th-century English literature, American literature, theoretical bases of literary criticism and genre theory
French Studies: Bernard Aresu	(713) 527-4851 fax: (713) 285-5951 fren@rice.edu	Medieval through contemporary literature, French literary theory, philosophy, French cultural history
German and Slavic Studies: Klaus Weissenberger	(713) 527-4868 fax: (713) 285-5964 germ@ruf.rice.edu	All periods of German literature, literature of East Germany, exile literature, medical philology and dialectology, genre theory, methods of criticism, cultural theory, German cinema
Hispanic and Classical Studies: Robert Kauffmann	(713) 527-5451 fax: (713) 527-4863 span@rice.edu	Medieval, golden age, and modern peninsular Spanish literature, modern Spanish American literature, Hispanic linguistics, second language acquisition, semiotics and literary theory
History: Gale Stokes	(713) 527-4948 fax: (713) 285-5207 hist@rice.edu	Medieval history, modern British, French, German, and Balkan history, American Colonial history, Old and New South and Civil War history, legal, constitutional, intellectual, and recent history, military history, history of science, East Asian and Latin American history
Human Performance and Health Sciences: James Disch	(713) 527-4808 fax: (713) 285-5329 hphs@rice.edu	
Linguistics: James Copeland	(713) 285-6010 ukeie@ruf.rice.edu	General and cognitive-functional linguistics, syntax and semantics, discourse analysis, typology, language description and change, computational linguistics
Philosophy: George Sher	(713) 527-4994 phil@ricevm1.rice.edu	History of philosophy, metaphysics, ethics, medical ethics, social and political philosophy, philosophy of law, language, and science
Religious Studies: Anne Klein	(713) 285-5201 fax: (713) 285-5486 reli@rice.edu	Theological and medical ethics, New Testament and early Christianity, Indo-Tibetan thought and practice, history of Christianity, contemporary continental philosophy of religion, psychology of religion, Judaism

Department Chair	Phone, Fax, and E-Mail	Faculty Research Interests
SHEPHERD SCHOOL OF MUSIC		
Michael Hammond (Dean)	(713) 527-4854 fax: (713) 285-5317 musi@rice.edu	Orchestral studies, performance, conducting, composition, theory, music history
WIESS SCHOOL OF NATURAL SCIENCES		
Biochemistry and Cell Biology: Frederick Rudolph	(713) 527-4015 fax: (713) 285-5154 bioc@rice.edu	Biochemistry, biophysics, developmental biology, cell biology, genetics, molecular biology, neurobiology, structure and function of nucleic acids and proteins, regulatory processes, biochemistry of lipids, enzymology, NMR and crystallography, cellular regulation, oxygen and electron transport, molecular genetics of plants, animals, fungi, bacteria, bacteriophage
Chemistry: Graham Glass	(713) 737-5683 fax: (713) 285-5155 chem@rice.edu	Synthesis and biosynthesis of organic natural products, synthesis of small cycloalkanes, molecular recognition and biological catalysis, bioinorganic and organometallic chemistry, chemistry of group 13 (III) elements, high-pressure and high-temperature chemistry, fluorine chemistry, chemical vapor deposition, design of nanophase solids, molecular photochemistry and photophysics, infrared kinetic spectroscopy, laser and NMR spectroscopy, study of oriented molecular beams, theoretical and computational chemistry, and study of giant fullerene molecules and fullerene nanowires
Ecology and Evolutionary Biology: Ronald Sass	(713) 527-4919 fax: (713) 285-5232 eeb@rice.edu	Biogeochemistry, wetland ecology, plant community and population ecology, behavioral ecology, sociobiology, molecular evolution
Geology and Geophysics: John Anderson	(713) 527-4880 fax: (713) 285-5214 geol@rice.edu	Stratigraphy, sedimentation, paleoclimate, geophysics, geodynamics, global plate tectonics, geochemistry, igneous and metamorphic petrology, marine geology and oceanography, structural geology, and rock mechanics
Mathematics: Frank Jones	(713) 527-4829 fax: (713) 285-5231 math@rice.edu	Differential geometry, ergodic theory, partial differential equations, probability, real analysis, mathematical physics, complex variables, geometric and algebraic topology
Physics: Marjorie Corcoran	(713) 527-5310 fax: (713) 527-9033 physics@rice.edu	Atomic and molecular physics, biophysics, condensed matter and surface physics, nuclear and particle physics, theoretical physics
Space Physics and Astronomy Patricia Reiff	(713) 527-4939 spac@rice.edu	Observational astronomy, theoretical astrophysics, space plasma physics, solar system physics, earth system science
SCHOOL OF SOCIAL SCIENCES		
Anthropology: George Marcus	(713) 527-4847 fax: (713) 285-5455 anth@rice.edu	Archaeology, anthropological linguistics, social/cultural anthropology, complex societies
Economics: George Zodrow	(713) 527-4875 econ@rice.edu	Differential tax incidence, optimal taxation, labor economics, econometrics, industrial organization, monetary economics, state and local public finance, micro foundations of macroeconomics
Political Science: Keith Hamm	(713) 527-4842 poli@rice.edu	Comparative government and political development in Western Europe and Latin America, American government including public policy, Congress, and intergovernmental relations, international relations and conflict
Psychology: Robert Dipboye	(713) 527-4856 fax: (713) 285-5221 psyc@rice.edu	Cognitive psychology, cognitive neuropsychology, human factors, industrial/organizational psychology

Thesis Committee. A thesis committee gives the oral examination for the student's thesis defense. This committee is approved by the vice provost for research and graduate studies at the same time that the student's candidacy is approved.

A thesis committee comprises at least three members. Two, including the committee chair, must be members of the student's department faculty; in doctoral thesis committees, one member must be from another department within the university. At least three members of the committee must meet one of the following requirements:

- Tenured or tenure-track members of the Rice faculty
- Research faculty holding the rank of Faculty Fellow, Senior Faculty Fellow, or Distinguished Faculty Fellow
- Faculty who have been previously certified by the vice-provost for research and graduate studies

The committee chair need not be the thesis director. The chair, however, must be either a tenured or tenure-track member of the major department or a research faculty member of the major department.

Candidates are responsible for keeping the members of their committee informed about the nature and progress of their research. They also must establish a schedule for thesis completion and review. The members of the committee, in turn, should review the thesis in a timely way, approving a preliminary form of the thesis before scheduling the oral examination.

Oral Examination in Defense of Thesis. The public oral defense of a thesis may be held at any time during either semester except during official examination periods. For degrees to be conferred at the subsequent May commencement, candidates must pass the orals by the last day of spring semester classes.

Oral examinations for the doctoral degree must be announced in *Rice News* at least one week in advance. Students should note that material printed in *Rice News* must be submitted at least two weeks before publication; the *Rice News* calendar editor can provide specific submission dates. Ph.D. candidates therefore should begin scheduling their oral defense at least three weeks in advance. Should an oral examination for the Ph.D. fall during the summer, the posting of a notice of the time and place on the bulletin board of Fondren Library in the preceding week suffices as a public announcement.

Oral examinations for the master's degree require only that public notice be posted on the department bulletin board one week in advance.

The length of the oral examination and the subject matter on which the candidate is questioned are left to the judgment of the committee. After candidates successfully pass the oral examination in defense of the thesis, they must submit two signed copies of the thesis to the Office of Graduate Studies no later than one year from the date of the examination. Students passing the oral examination on or before the first day of classes of any semester do not have to register for that or any subsequent semester even though they may be continuing to make minor revisions to the final copy of their thesis.

Should a candidate fail, the committee chair may schedule a second examination. Students who fail a second time must withdraw from the university.

To be placed on the degree list, students should send a copy of their approval of candidacy form, signed by the thesis committee signifying successful defense of the thesis, to the Office of Graduate Studies immediately after the oral examination.

Ph.D. students must defend their theses before the end of the sixteenth semester of their residency at Rice. Master's students must defend their theses before the end of the eighth semester of their residency at Rice.

Thesis Regulations and Procedures. The thesis is the principal record of a student's work for an advanced degree. It is permanently preserved in the library. Students must follow in detail the directions for standard thesis form provided by the Office of Graduate Studies at the time of approval of candidacy.

Students submitting a dissertation for the Ph.D., D.A., or D.M.A. must fill out a Survey of Earned Doctorates form. All students submitting theses, whether for master's or doctoral degrees, must complete a University Microfilm contract. Students must pay their fees for microfilming and binding their thesis to the cashier before submitting the two copies to the Office of Graduate Studies for approval. The deadline for submitting the thesis is noon of the next-to-last Friday before commencement.

Withdrawals or Leaves

Withdrawal and Readmission. Failure to register for any period without a leave of absence granted by the Office of Graduate Studies constitutes a de facto withdrawal. Students who later wish to resume study must reapply to the university. Readmission requires the recommendation of the department and the approval of the vice provost for research and graduate studies. Accepted students must pay a readmission fee of \$100.

Leave of Absence. A leave of absence is granted only by the Office of Graduate Studies upon the recommendation of the department and only to graduate students in good standing with the university. Students must obtain approval for a leave before the academic semester in question. Leaves are not granted after students register for courses or after the registration period passes. Normally, students may take a leave of absence for no more than two consecutive semesters. They may not do degree work at Rice or work involving Rice faculty or facilities during a leave of absence. Students must pay a reinstatement fee of \$25 upon their return from an official leave.

Academic Discipline

Probationary Status. Students whose cumulative grade point average or the average for the most recently completed semester falls below 2.33 are placed on probationary status; some departments may have more stringent standards. Although the department in most cases sends the student a letter of warning, probationary status applies whether or not a letter has been issued. A second semester of probationary status leads to automatic dismissal by the Office of Graduate Studies unless the student's department presents a plea for exception that is approved by the vice provost for research and graduate studies. Departments are free to dismiss a student in the first semester of probationary status if they issue a warning before taking action.

Dismissal. Reasons for student dismissal include unsatisfactory progress (see above) or behavior judged by Rice to be disruptive or otherwise contrary to the best interests of either the university or the student.

Appeal. Students may petition the vice-provost for research and graduate studies regarding the application of any academic regulation. Petitions should go through department chairs and divisional deans, who will be asked to comment on their merits. In some cases, the vice-provost will seek the advice of the Graduate Council.

Tuition, Fees, and Expenses

The tuition and fees for graduate students in this section are for the 1997-98 academic year only and are subject to change in subsequent years as the operating expenses of the university change. Current tuition and fees for full-time students

(enrolled for 9 hours or more each semester) in the graduate division who are engaged in "on-campus" graduate work are as follows, in effect through four semesters for master's candidates and six semesters for doctoral candidates:

	Per Year	Per Semester
Tuition-non-Jones School	\$14,300	\$7,150
Tuition-Jones School	\$14,400	\$7,200
Health service fee	\$208	\$104
Graduate Student Association fee	\$12	\$6
Shuttle fee	\$10.50	
Honor Council fee	\$1	
Jones School Activities Fee	\$55	

After four or six semesters of full-time study, depending on degree program, students continuing any phase of their studies on or off campus, including work on their dissertation, must register at Rice and pay tuition of \$795 per year (\$397.50 per semester). All students must also carry health insurance (see page 12). Other fees applicable under special circumstances follow:

Reinstatement fee upon return after official leave of absence	\$ 25
Readmission fee upon return after withdrawal or failure to register	\$100
Fee for off-campus preceptorship programs credited on transcript	\$100/semester
Tuition for part-time and Class III students	\$795/credit hour
Registration fee for part-time and Class III students	\$ 77/semester

For \$70 each, graduate students and their spouses may buy from the Cashier's Office an athletic events ticket, which admits them to all regularly scheduled Rice athletic events.

Financial Aid

Fellowships, Scholarships, and Prizes

Most graduate students in degree programs requiring a thesis are supported by fellowships or research assistantships. Departments award, however, very few teaching assistantships. According to a 1993 study, more than 90 percent of thesis students received significant merit-based awards through their first three years of graduate study.

To receive fellowship or scholarship aid, students must be engaged in full-time graduate study; part-time students are not eligible for such aid. Ph.D. students may receive support from Rice-funded fellowships and scholarships for no more than five years of study; the limit for master's degree students is three years. To maintain eligibility in their fifth year, doctoral students must have achieved candidacy. In the case of Ph.D. students entering with a previously earned master's degree relevant to their course of study, stipend support extends for no more than four years of study, and the students must have achieved candidacy by the beginning of their fourth year.

Fellowship and scholarship recipients are selected by the individual departments, subject to the approval of the Office of Graduate Studies. Students should send their applications for such awards directly to the department involved.

Special Fellowships. A range of fellowships, scholarships, and prizes is available at Rice. Memorial fellowships are founded and endowed by gift or bequest on the part of friends of the university. Several industrial fellowships are maintained by companies

interested in the development of technical fields and the training of competent scientists, engineers, and business executives. For information on special fellowships targeted to particular studies, students should consult with their department (not all department-specific fellowships are available every year).

Scholarships that provide both tuition and stipends are also available for a limited number of graduate students participating in the Army or Navy ROTC programs. For information on these scholarships, contact the Military or Naval Science departments.

Graduate Fellowships. Graduate students with high academic records and strong qualifications receive support through Rice fellowships. In most cases, these fellowships provide a stipend plus tuition for the nine-month academic period. Special fellowships may be available to provide support during the summer months. Departments may nominate particularly outstanding entering students for a Rice Presidential Fellowship.

Research Assistantships. Usually funded from grants and contracts, research assistantships are available in many departments, especially in the schools of Natural Sciences and Engineering. Qualified students (usually second-year or later) receive these awards to provide assistance on faculty research projects, work that usually contributes to the student's own thesis. In some departments, a limited number of teaching assistantships may be available to advanced students.

Graduate Tuition Scholarships. Students whose previous records show marked promise but for whom no graduate fellowships are available may receive full or partial graduate tuition scholarships, which do not include a stipend, especially in their first year of graduate study.

Termination of Aid and Appeal. The Office of Financial Aid sends written notice to students qualifying for financial assistance who have not made minimum satisfactory progress and whose aid therefore is being terminated. Satisfactory academic progress is determined by the student's department at the end of each academic year, but the minimum requirement for all graduate students is a cumulative grade point average of 2.33. At the end of the fall semester, notices are sent to the graduate student's department. At the end of the spring semester, they are sent to the most recent permanent address provided to the registrar. In both cases, the office considers the notifications to be delivered.

Any student ruled ineligible for financial aid due to lack of satisfactory progress may appeal such action to the Committee on Admission and Student Financial Aid. Students should send their appeals in writing to the chair of the committee, which may take into account mitigating circumstances.

Loans or Work-Study Financial Aid

In addition to fellowships and scholarships, the Office of Financial Aid offers need-based assistance in the form of loans and federal work-study.

Subsidized William D. Ford Federal Direct Loans. Graduate students may process these loans through Rice up to a maximum eligibility of \$8,500 per year, as set by Rice University and the guarantor. No interest accrues and no payment is required under the following conditions:

- While a student is enrolled at least half time at Rice
- While a student is enrolled full time in any eligible postsecondary institution
- For six months after withdrawing from Rice

Repayment begins after this period, including a variable interest rate not to exceed 8.25 percent on the unpaid principal balance. Depending on the size of the total loan commitment, the repayment period may extend over as many as 10 years. Students should submit a completed William D. Ford Federal Direct Loan Request Form application, with supplements and 1040s, to the Office of Financial Aid.

Unsubsidized William D. Ford Federal Direct Loans. Graduate students may use this program to borrow up to \$10,000 per year to an aggregate of \$73,000 (undergraduate and graduate combined). Interest on these loans accrues during the in-school and deferment periods, but students do not have to begin paying on the principal and interest until they leave Rice. The interest rate on the unpaid balance of the loan is a variable rate not to exceed 8.25 percent (adjusted each July 1).

On-Campus Employment. All students may work on campus, but 10 to 12 hours a week is a reasonable limit for most. Federal work-study is available to students who meet eligibility criteria set by the federal government. Interested students should file a Free Application for Federal Student Aid (FAFSA) with the Federal Aid Program. Earnings are limited to the amount shown on the award letter.

Special Loan Programs. A Gulf Oil Corporation Foundation Loan Fund and the Benjamin S. Lindsey and Veola Noble Lindsey Memorial Loan Fund are available to help students working toward a degree meet their educational expenses, but funds are limited. Interested students may contact the Office of Financial Aid. Those wishing to apply for a loan under either of these programs should begin the application process the summer before the academic year for which they are seeking assistance. Detailed information and application forms are available in the Office of the Financial Aid.

Emergency Loan Fund. Established through gifts from the Graduate Wives Club of 1972-73, the Graduate Student Association, and various faculty members, this fund makes available emergency loans to help graduate students at Rice with short-term needs. Loans are limited to \$250 and must be repaid within three months. In lieu of interest, a charge of \$1 per \$50 loaned is assessed to maintain the fund.

Fellowships, Scholarships, and Prizes

Memorial Fellowships, Honors, and Prizes. Provision is made for a variety of fellowships, scholarships, and prizes available to graduates of this and other universities. Memorial fellowships that have been founded and endowed by gift or bequest on the part of friends of Rice University provide stipends enabling the holders to devote their time to study and research in their chosen fields. There are also several industrial fellowships maintained by companies interested in the development of technical fields and the training of competent scientists, engineers, and business executives.

Persons desiring consideration for appointment as fellows should consult with the department in which they desire to do research. However, not all fellowships are available every year.

A partial list of graduate scholarships, fellowships, and awards includes:

Achievement Rewards for College Scientists (ARCS Foundation) Scholarships in Science and Engineering

Ora N. Arnold Fellowship for better understanding between people and governments of the United States and those of Mexico, the South American states, the West Indies, and the Philippine Islands
 Nettie S. Autrey Memorial Fellowship in Science
 Eleanor and Mills Bennett Fellowships in Hydrology
 George R. Brown Fellowship
 Ralph Budd Award for Research in Engineering
 Samuel Fain Carter Fellowship in Economics
 Edward F. Chavanne Fellowship in Religious Studies
 Robert L. Chuoke Award in Physics
 Cities Service Research Fellowship in Geology
 Continental Oil Company Fellowship in Geology
 John W. Cox Research Fund for Scholarships and Fellowships in Bioengineering and Biosciences
 William Dunlap Darden Medal in Architecture
 Edmund McAshan Dupree Distinguished Graduate Fellowship in Electrical Engineering
 Environmental Protection Agency Fellowships in Environmental Science and Engineering
 W. Maurice Ewing Fellowship in Marine Science
 Exxon Fellowship in Geology
 John W. Gardner Award in Humanities and Social Sciences
 Leroy Caleb Gibbon Award in Geology and Geophysics
 Marilyn Marrs Gillet Fellowship in the Humanities
 Louis J. Girard Foundation Fellowship for Ophthalmic Research
 William and Elva Gordon Scholarship in Space Physics and Astronomy
 Gulf Oil Company Fellowship in Geology
 Patricia Roberts Harris Fellowships
 Karl F. Hasselmann Fellowship in Chemical Engineering
 Marjory Meyer Hasselmann Fellowship in Chemistry
 Fannie and John Hertz Foundation Fellowship in Applied Physical Sciences
 Diana P. Hobby Fellowship
 Houston Gem and Mineral Society Fellowship in Geology
 Houston Geological Society Outstanding Student Award
 Houston Livestock Show and Rodeo Endowed Scholarship
 Houston Oil and Minerals Corporation Fellowship in Geology
 Jameson Fellowship for American Decorative Arts
 W. M. Keck Foundation Fellowship in Geology and Geophysics
 Ruth Lee Kennedy Fellowship for Studies in the Golden Age of Spanish Literature
 Captain Charles Septimus Longcope Award in History
 Edgar Odell Lovett Fellowships in Mathematics
 Jermayne MacAgy Fellowships in Art History
 Jack F. Maddox Foundation Fellowship in Engineering
 William F. Marlar Scholarship in Space Science
 Mrs. L. F. McCollum Fellowship
 John P. McGovern Outstanding Premedical Student Award
 John W. Mecom Fellowship in Geology
 Earl Douglas Mitchell Fellowship
 National Institutes of Health Fellowships
 National Institutes of Health Traineeships in Biology
 National Science Foundation Graduate Fellowships
 Pennzoil Company Fellowship in Geology
 Petroleum Research Fund Fellowships of the American Chemical Society

Phillips Petroleum Company Fellowship in Chemistry
 Mrs. L. A. Richardson Trust
 Zevi W. Salsburg Awards in Chemistry
 Schlumberger Foundation Fellowship in Mathematics
 Shell Fellowship in Physics
 Robert P. and Eleanor Warden Shubinski Award in Civil Engineering
 Sigma Xi Research Awards
 John Stauffer Scholarship in Chemistry
 Tenneco Oil Company Fellowship in Geology
 Texaco Fellowship in Physics
 Texas Instruments Graduate Student Fellowship
 John and Eileen Tietze Fellowship
 Radoslav A. Tsanoff Fellowship in Philosophy
 Richard B. Turner Memorial Awards in Chemistry
 Eric Umland Endowed Fund
 Union Oil of California Fellowship in Geology
 Lodieska Stockbridge Vaughan Fellowship
 Harry Weiser Awards in Chemistry
 Robert A. Welch Foundation Predoctoral Fellowships
 Wiess Fellowship in Geology
 H. A. Wilson Award in Physics
 Wray-Todd Fellowships in Natural Sciences

Scholarships and Prizes of the Jesse H. Jones Graduate School of Administration

Amerada Hess Corporation Fellowship
 J. Kenneth S. Arthur Scholarship
 Alice Pratt Brown Scholarship
 COMIT Scholarship in Management Information Systems
 J. Howard Creekmore Scholarships
 Criterion Investment Management Company Endowed Fellowship
 Dean's Award for Academic Excellence
 Educational Foundation of Texas Society of Certified Public Accountants
 Award for Accounting Excellence
 David E. Farnsworth Scholarship
 Financial Executives Institute Award in Administrative Science
 E. F. "Gene" Florian Scholarship in Administrative Science
 Bernard Fuchs Scholarship
 H. H. Galloway Award in Administrative Science
 Harry B. and Aileen B. Gordon Scholarships
 Houston Business Forum Scholarship
 Houston Society of Financial Analysts Scholarship Award
 Jesse H. Jones Graduate School of Administration Award for Excellence in Taxation
 Jones Graduate School Alumni Association Scholarship
 Jones Graduate School Partners Scholarship
 Jones Scholars
 William H. and Marion F. Keenan Fellowships
 Cooper M. and Zava Waldrop Lochridge Scholarship in Administrative Science
 Speros P. Martel Scholarship
 John T. McCants Scholarship in Accounting
 Leon Nad Memorial Scholarship
 Vernon F. "Doc" Neuhaus, Sr., Scholarship
 Lawrence J. O'Connor, Jr., Endowed Fund
 Lorane T. Phillips Award for Excellence in Writing

Robert E. Phillips Award for Excellence in Oral Presentation
 Verne F. Simons Scholarship in Accounting
 Texaco Foundation Scholarship
Wall Street Journal Student Achievement Award
 M. A. "Mike" Wright Award

Scholarships and Prizes of The Shepherd School of Music. See listing in the undergraduate section, page 64.

Rice Graduate Fellowships. Graduate students with high academic records and outstanding qualifications may receive support through awards of Rice University Fellowships. In most cases, these fellowships provide a stipend plus tuition for the nine-month academic period. Special fellowships may be available to provide support during the summer months. Particularly outstanding entering students may be nominated by their department for a Rice Presidential Fellowship.

Research Assistantships, usually funded from grants and contracts, are available in many departments (especially those in the divisions of natural sciences and engineering). These awards are given to qualified students (usually second-year or later) to provide assistance on faculty research projects. However, such work normally contributes to the student's thesis. In some departments, a limited number of Teaching Assistantships may be available to advanced students. Appointees to any fellowship or assistantship must be engaged in full-time graduate study.

Eligibility for support from Rice University funds is limited to five years of study for students seeking a doctorate or three years for students seeking a master's degree. However, in order to maintain eligibility in the fifth year, the student must have achieved candidacy. Doctoral students entering with a previously earned relevant master's degree will be eligible for stipend support for a maximum of four years of study and must have achieved candidacy by the beginning of the fourth year.

Graduate Tuition Scholarships. Students whose previous records show marked promise but for whom no graduate fellowships are available may, especially in their first year of graduate study, be awarded full or partial graduate tuition scholarships without stipend. Graduate scholars must be engaged in full-time study.

Scholarships that provide both tuition and stipends are also available for a limited number of graduate students who are participants in the Army or Navy ROTC programs. For information on these scholarships, contact the Departments of Military or Naval Science.

Graduate Student Life

Health Requirements for Graduate Students

Paying the student health service fee gives graduate students access to both the Student Health Service and Rice Counseling Center (see pages 11-13). New graduate students may not register for or attend classes until they have completed and returned the health data form to Rice and met the immunization and TB screening requirements.

All graduate students must have health insurance. Students may purchase insurance through the university at two levels of coverage, as described in a brochure available in the Cashier's Office and the Office of Student Activities. Rice's group

coverage for the 1997-98 academic year is effective from 12:01 A.M., August 15, 1997, until 12:01 A.M. August 15, 1998. Dependent coverage is also available. Students who have other medical insurance should sign a waiver card showing proof of insurance and return it to the Cashier's Office by August 15, before classes begin, to avoid automatic billing.

Graduate Student Association

All full-time students in the graduate program are members of the Graduate Student Association, which is the sole organization representing graduate students as a body. The governing body of this organization is the Graduate Student Association Council, consisting of a representative from each department offering graduate study and a president, vice president, secretary, and treasurer elected by the council. Graduate students also participate in university affairs through their representatives on many standing and ad hoc university committees, such as the Graduate Council, the Research Council, and various department committees.

One of the functions of the Graduate Student Association is to encourage social interaction among graduate students from different departments. To that end, the association organizes a variety of social activities open to all members of the graduate student body. Graduate student organizations falling under the umbrella of the Graduate Student Association include the Jones Graduate School Student Association and their affiliate organizations and the graduate division of the Chinese Student Association.

Housing for Graduate Students

The Rice Graduate House is located on the south edge of the campus at the corner of South Main and University. With its approximately 200 rooms, both private and shared, it houses a limited number of graduate students at a moderate cost; married students may apply, but the Graduate House cannot accommodate children. The facility also includes community kitchens, a commons and meeting rooms, and free transportation to academic buildings. Housing is assigned on a space-available basis. Students must reserve rooms in the Graduate House by July 15 for the fall semester.

Rooms and apartments are usually available for rent within walking or bicycling distance of the campus. Houston has a reasonable cost of living for a city of its size.

The offices of Academic Advising and Student Activities and the Graduate Student Association keep a record of available rooms and apartments listed with the university by area landlords. The daily newspapers and a weekly *Greensheet* are other sources of rental housing. Incoming graduate students should arrive in Houston several days early to allow themselves time to find suitable housing.

Class III Students in Nondegree Programs

Students with a 3.00 (B) or better grade average and an undergraduate or graduate degree from an accredited college or university may apply for admission as Class III students. These students may take courses for credit without being admitted to a specific degree program. Registration requires the permission of the instructor (and sometimes the department) and approval by the vice provost for research and graduate studies. All Class III applications to accounting and administrative science courses require approval of the Jones Graduate School. Class III students must register for at least 3 hours and cannot take courses on a pass/fail basis.

Students may not use courses taken under this arrangement to fulfill the requirements for a Rice degree unless and until they have been accepted into a degree program by an academic department (as well as, in the case of graduate students, by the vice provost for research and graduate studies) and received department approval; students are responsible for obtaining the proper approvals. Normally, they may count no more than three courses taken as a Class III student toward a graduate degree.

Application

Applications and course request forms are available from the Office of Graduate Studies. Official transcripts from all colleges and universities the student has attended should be mailed directly by the institutions to the Office of Graduate Studies. Students who were previously Class III students must complete continuation forms for each such semester, also available from the Office of Graduate Studies. All application materials are due by the workday closest to August 1 for fall semester courses and December 1 for spring semester courses. Late applications are not considered after classes have begun.

Tuition and Fees

The tuition for 1997-98 is \$795 per semester hour, plus a \$50 registration fee each semester. All fees are payable during registration, which students must complete by the end of the second week of class. Students failing to submit their applications by the deadline must pay a late application fee of \$50, as do continuing Class III students who fail to complete continuation forms on time. For some courses, students may be charged for computer time. If a class fills with degree students, instructors may drop Class III students up to the end of the third week of class. In that case, the tuition (less \$25 of the registration fee) will be refunded.

Foreign Graduate Students

Because Class III is not a degree-granting program, foreign graduate students enrolled as Class III students cannot receive visas from Rice University. B-2 visitors may be ineligible for enrollment as Class III students. The vice provost for research and graduate studies and the foreign student adviser will make a determination in those cases.

Scholarships and Prizes of the Shepherd School of Music. See listing in the undergraduate section, page 64.

Rice Graduate Fellowships. Graduate students with high academic records and outstanding qualifications may receive support through awards of Rice University Fellowships. In most cases these fellowships provide a stipend plus tuition for the nine-month academic period. Special fellowships may be available to provide support during the summer months. Particularly outstanding entering students may be nominated by their department for a Rice Presidential Fellowship.

Research Assistantships, usually funded from grants and contracts, are available in many departments (especially those in the divisions of Natural Sciences and Engineering). These awards are given to qualified students (usually second-year or later) to provide assistance on faculty research projects. However, such work normally contributes to the student's thesis. In some departments, a limited number of Teaching Assistantships may be available to advanced students. Appointees to any fellowship or assistantship must be engaged in full-time graduate study.

Eligibility for support from Rice University funds is limited to five years of study for students seeking a doctorate or three years for students seeking a master's degree. However, in order to maintain eligibility in the fifth year, the student must have achieved candidacy. Doctoral students entering with a previously earned relevant master's degree will be eligible for stipend support for a maximum of four years of study and must have achieved candidacy by the beginning of the fourth year.

Graduate Tuition Scholarships. Students whose previous records show marked promise but for whom no graduate fellowships are available may, especially in their first year of graduate study, be awarded full or partial graduate tuition scholarships without stipend. Graduate scholars must be engaged in full-time study.

Scholarships that provide both tuition and stipends are also available for a limited number of graduate students who are participants in the Army or Navy ROTC programs. For information on these scholarships, contact the Departments of Military or Naval Science.

*Departments and
Interdisciplinary
Programs*



Accounting and Administrative Science

The Jesse H. Jones Graduate School of Administration

Dean

Gilbert R. Whitaker, Jr.

Professors

Robert E. Bixby
John B. Bryant
Bala G. Dharan
Robert Dipboye
Linda P. Driskill
George Kanatas
Ronald N. Taylor
Wilfred C. Uecker
Fred R. von der Mehden
Robert A. Westbrook
Edward E. Williams
Duane Windsor
Stephen A. Zeff

Adjunct Professors

Khleber Attwell
Stephen J. Banks
Amir Barnea
John B. Boatwright
Jerry E. Finger
Robert M. Hermance
Edward D. McDonald

Associate Professors

Richard R. Batsell
David L. Ikenberry
H. Albert Napier

Visiting Associate Professor

Craig P. Dunn

Adjunct Associate Professors

Robert N. Flatt
John K. Hannan
Donald L. Williams

Assistant Professors

Steven C. Currall
Michele J. Daley
Jeff Fleming
Trichy V. Krishnan
Piyush Kumar
E. Geoffrey Love
Barbara Ostdiek
Sundaresh Ramnath
Karen Elisabeth Schnietz
Douglas A. Schuler

Visiting Assistant Professor

Avinash K. Verma

Lecturers

W. Clifford Atherton
David M. Austgen
Lovett Baker
Donald D. Clayton
Caryn McQuilkin Crump
Gretchen L. Gemeinhardt
Brad Jackson
Patricia R. Lawrence
Nicholas G. Malavis
James P. Mandel
Jerlyn Leigh Mardis
Dennis E. Murphree
Elizabeth C. O'Sullivan
David Ross III
V. Richard Viebig, Jr.
Alan D. Westheimer

Degrees Offered: M.B.A., M.B.A./Master of Engineering

The Jesse H. Jones Graduate School of Administration was established in 1974 through a gift from Houston Endowment Inc. The school provides its highly select graduate students with unique opportunities for professional training in accounting, business administration, or public and nonprofit management. The Master of Business Administration (M.B.A.) program includes elective offerings in accounting, entrepreneurship, finance, international business, management information systems, marketing, operations management, organizational behavior and human resource management, public and nonprofit management, and strategic management and planning.

A joint M.B.A./Master of Engineering degree offered by the Jones Graduate School and the George R. Brown School of Engineering, in any of the departments of engineering or in statistics, prepares students to become managers in organizations requiring a high level of technical expertise and management skills.

Although no undergraduate major is offered, undergraduate accounting courses are available.

Admissions Requirements for Jones Graduate School

For general information, see Admission to Graduate Study (page 77). Applicants to the M.B.A. program must submit scores on the Graduate Management Admission Test (GMAT) rather than the Graduate Record Examination (GRE), and, unless they received an undergraduate degree from a U.S. college or university, foreign nationals whose native language is not English must submit recent scores on the Test of English as a Foreign Language (TOEFL). Admission to the Jones Graduate School is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT.

M.B.A. Program. Although the M.B.A. program has not established specific prerequisite courses for admission, students may find it beneficial to have a background that includes undergraduate course work in principles of accounting, principles of microeconomics, and mathematics. Because spreadsheet and word-processing software is used extensively in course work, students should have a thorough understanding of these types of software packages before enrolling.

Joint M.B.A./Master of Engineering Program. To enter the joint degree program, applicants must be accepted by both the Jones Graduate School and the engineering department in which they wish to enroll. The program requires a special application, available from the Jones Graduate School, and the GRE rather than the GMAT. Some engineering departments require advanced tests as well.

Degree Requirements for M.B.A.

For the M.B.A degree, students must:

- Spend at least two academic years in residence at Rice
- Complete at least 64 semester hours in course work
- Register for no fewer than 15 hours and no more than 18 hours each semester (any other registration requires special permission)

All registration and drop/add forms require the signature of the associate dean for admissions and student affairs or a designee. The school, which must approve all courses, specifies the sequence of required first-year courses at registration for each entering class.

Waivers, Exemptions, and Transfers of Credit. At its sole discretion, the school may waive or credit required courses in exceptional cases where students already have the equivalent preparation. This does not necessarily reduce the residence requirement, but it does make additional elective courses available. Students otherwise must follow the prescribed curriculum of study. Those seeking exemptions must submit a written petition to the school's Curriculum and Standards Committee, which advises the dean.

First-Year Courses. Students must complete at least 33 approved semester hours in a course program specified in its entirety by the school. These foundation courses, including ADMN 501 and 502 *Dean's Seminar I and II*, are in accounting, communications, economics, entrepreneurship, finance, legal and governmental processes, management information systems, marketing, organizational behavior, and statistics. They serve as prerequisites for required and elective courses taken in the second year.

Second-Year Courses. Two courses on strategy and operations integrate the foundation skills taught in the first year. Students in the second year must complete at least 31 approved semester hours as follows:

- ADMN 503 and 504 *Dean's Seminar III and IV*
- ADMN 591 and 592 *Strategy and Operations I and II*
- 24 hours of approved electives

Areas of Interest. Although M.B.A. students are not required to select a formal elective concentration for degree purposes, they may wish to choose one or more areas of interest from among the following: accounting, entrepreneurship, finance, general management, international business, management information systems, marketing, operations management, organizational behavior and human resource management, public and nonprofit management, and strategic management and planning. Each faculty group offers students advice about how to prepare for careers in a particular area of interest. Students may also take upper-level or graduate courses from other departments at Rice. Students may not credit basic foreign language courses toward the M.B.A. degree, but advanced language courses may qualify with approval from the associate dean for admissions and student affairs.

Degree Requirements for Joint M.B.A./Master of Engineering

Students may earn this nonthesis engineering degree in the fields of chemical engineering, civil engineering, computational and applied mathematics, computer science, electrical and computer engineering, environmental science and engineering, mechanical engineering and materials science, and statistics. Ordinarily, the engineering degree takes one academic year to complete, whereas the M.B.A. requires two. Joint-degree candidates, however, can fulfill requirements for both degrees in two academic years and one summer.

For the joint M.B.A./Master of Engineering degree, students must complete:

- At least two academic years plus a summer in residence at Rice
- 76 semester hours in approved course work:
 - 24 hours (6 hours a semester) in an engineering discipline
 - 52 hours (12 hours a semester) in business administration
- 6 hours of basic accounting courses during the summer before the first academic year, with prior approval for transfer of credit

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the associate dean for admissions and student affairs.

Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the M.B.A. degree program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards. A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken for the M.B.A. degree (including approved courses taken outside the Jones Graduate School) are counted in the cumulative grade point average calculation. Students must also maintain a cumulative grade point average of 3.00 or higher to receive financial aid from Jones Graduate School sources.

Students who have completed 64 approved hours for the M.B.A. degree or 76 hours for the joint M.B.A./Master of Engineering degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation. These students may, at the school's sole discretion, take additional approved course work during the subsequent 12 months in an effort to raise their cumulative grade point average to 3.00.

Only grades of C and higher are counted for credit toward graduation. If students receive **a grade lower than C** in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the hours.

Students **failing a course** are placed on academic probation regardless of cumulative grade point average. Students may retake the failed course only once and only if their cumulative grade point average is 3.00 or higher. Students who fail a course twice are dismissed. (Students may not take any advanced course for which the failed course is a prerequisite until they satisfactorily complete the prerequisite course.)

Students with a cumulative grade point average lower than 3.00 at the end of any semester are **dismissed**. Notification of a cumulative grade point average lower than 3.00 means that the student has been dismissed and may not register for more courses.

Full-time students in the first semester and flex-time students in the first two semesters of their studies who have been dismissed may appeal to the dean for a one-year **suspension** or for a continuation on **academic probation**, if and only if they:

- Earn a cumulative grade point average of at least 2.90 in the first semester of study (all students) and at least 2.95 in the second semester of study (flex-time students)
- Earn no more than three grades of B- or lower in their studies

A student placed on academic probation cannot graduate, may not drop courses, and must complete all courses with a grade of C or better. Full-time students must achieve a cumulative grade point average of at least 3.00 by the end of their second semester, and flex-time students must achieve a cumulative grade point average of at least 3.00 by the end of their third semester. Suspension for failure to meet either academic or professional standards always requires that the student apply for readmission to the school.

Professional Standards. M.B.A. students are held to the high standards of professional conduct expected of managers, standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for **failure to meet professional standards**, as defined in the University Code of Conduct. The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing of specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

Financial Aid

Financial assistance by the Jones Graduate School is awarded only for a given semester or year. Continuation of assistance depends upon satisfactory academic performance, professional behavior, and availability of funds. Academic or disciplinary probation, suspension, or more than three grades below B- result in the removal of all forms of school financial assistance, whether scholarship, loan, or employment. Scholarships are awarded only for academic merit.

Resolution of Disagreements

By university policy, a final grade for a course submitted to the Registrar's Office may be changed only if the instructor made a clerical error in calculating that grade.

In the event of a significant disagreement not involving grades between a student and an instructor, the following grievance process is used. First, the student should try to resolve the disagreement with the instructor. After that, either party may bring the matter to the associate dean for admissions and student affairs, who will attempt mediation. Either party may then appeal to the dean through the Curriculum and Standards Committee.

The grievance process is conducted according to a formal written policy approved by the school faculty and should be reserved for serious complaints of individual mistreatment; frivolous complaints will be dismissed.

See ACCO (pages 224-225) and ADMN (pages 226-230) in the Courses of Instruction section.

Ancient Mediterranean Civilizations

The School of Humanities

Director and Adviser

Michael Maas

Professors

Werner H. Kelber
 Roderick J. McIntosh
 Susan Keech McIntosh
 Albert van Helden
 Harvey E. Yunis

Associate Professors

Talya Fishman
 Donald Ray Morrison
 David Nirenberg

Carol E. Quillen
 Paula Sanders
 Kristine Gilmartin Wallace
 Walter M. Widrig

Assistant Professors

Matthias Henze
 Hilary Mackie
 Rebecca Mersereau

Lecturer

Deborah Beck

Degree Offered: B.A.

This interdisciplinary major in the cultures of ancient Greece and Rome, Judaism, early Christianity, and early Islam, as well as their antecedents, explores these traditions both for their intrinsic interest and for the contributions each has made to contemporary Western society. This combined focus on ancient cultural history in its broadest sense and on perspectives offered by cultural criticism enables students to examine the beginnings of the civilization in which they now participate.

Courses for this major address common questions about the transmission and transformation of cultures in the ancient Mediterranean world. Students examine sources, such as texts, artifacts, and institutions, that illuminate this process. They study how shifting cultural centers and frontiers in this world are delineated, and they explore the general integration and disintegration of specific ancient cultures. This major also offers opportunities for archaeological fieldwork and study abroad.

Rice is a sponsor of the American School of Classical Studies at Athens, the American School of Oriental Research, and the Intercollegiate Center for Classical Studies in Rome. Students majoring in Ancient Mediterranean Civilizations are encouraged to study in these programs as well as in the College Year in Athens program.

Degree Requirements for B.A. in Ancient Mediterranean Civilizations

For general university requirements, see Graduation Requirements (pages 17-18). Single or double majors in Ancient Mediterranean Civilizations must complete at least 30 semester hours (10 courses). Students must take a core course near the beginning of their studies. They may select from the courses that follow to fulfill their requirements for the major (a list is also published in the program brochure):

Core Courses

- AMC 200 *Origins of Western Civilizations: Athens, Rome, and Jerusalem*
 CLAS 207 *Greek Civilization: An Introduction*
 CLAS 211 *Roman Civilization*

Anthropology

- ANTH 205 *Introduction to Archaeology*
 ANTH 206 *Introduction to World Prehistory*
 ANTH 362 *Archaeological Field Techniques*
 ANTH 363 *Early Civilizations*
 ANTH 460 *Advanced Archaeological Theory*
 ANTH 474 *Advanced Seminar on the Prehistoric Landscape*

Classical Studies

- CLAS 212 *Myth, History, and the Problem of the Past*
 CLAS 222 *Perspectives on Greek Tragedy*
 CLAS 315 *Socrates: The Man and His Philosophy*
 CLAS 316 *Democracy and Political Theory in Ancient Greece*
 CLAS 322 *Women in Greece and Rome*
 CLAS 335 *Classical Mythology*
 CLAS 351 *The Death of Epic*

Greek Studies

- GREE 101 *Introduction Ancient Greek I*
 GREE 102 *Introduction Ancient Greek II*
 GREE 201 *Intermediate Greek: Iliad*
 GREE 301 *Advanced Greek I: Homer's Odyssey*
 GREE 302 *Advanced Greek II: Herodotus*
 GREE 491 *Directed Reading*

Latin

- LATI 101 *Elementary Latin I*
 LATI 102 *Elementary Latin II*
 LATI 201 *Intermediate Latin I: Prose*
 LATI 202 *Intermediate Latin II: Poetry*
 LATI 302 *Advanced Latin: Tacitus*
 LATI 303 *Advanced Latin: Cicero and Catullus*
 LATI 307 *Vergil: Eclogues and Georgics*
 LATI 309 *Horace*

History

- HIST 152 *Freshman Seminar: Ancient History*
 HIST 200 *Origins of Western Civilizations: Athens, Rome, and Jerusalem*
 HIST 202/325 *Introduction to Medieval Civilization: Early Middle Ages*
 HIST 207 *Greek Civilization*
 HIST 273/373 *Postbiblical Jewish History I*
 HIST 281/381 *History of the Islamic Near East, 600-1258*
 HIST 306 *Politics and Society in Ancient Greece*
 HIST 307 *Imperial Rome from Caesar to Diocletian*
 HIST 308 *World of Late Antiquity*
 HIST 309 *Decline and Fall of the Roman Empire*
 HIST 320 *Science in Antiquity and the Middle Ages*
 HIST 334 *History of Astronomy and Cosmology*
 HIST 377 *The Ancient City*
 HIST 439 *Christianity and the West: From the Barbarians to Beowulf*
 HIST 451 *Philosophies and Theologies of History*
 HIST 460 *Advanced Seminar in Ancient History*
 HIST 489 *Sex and Group Identity, from Biblical Times to Modern U.S.*

History of Art

- HART 205 *Introduction to the History of Art*
 HART 304 *Art and Archaeology of the Prehistoric Aegean*
 HART 305 *Greek Art and Archaeology I*
 HART 306 *Greek Art and Archaeology II*
 HART 308 *Roman Art and Archaeology*
 HART 309 *Late Antique/Early Christian Art and Architecture*
 HART 310 *Byzantine Art and Architecture*
 HART 312 *Greek and Roman Architecture*
 HART 404 *The City of Athens*

Linguistics

- LING 437 *History of Linguistics*
 LING 455 *Ancient Languages: Near East*

Philosophy

- PHIL 201 *History of Philosophy I*
 PHIL 301 *Ancient and Medieval Philosophy*
 PHIL 307 *Social and Political Philosophy*
 PHIL 501 *Seminar in Ancient Philosophy*

Religious Studies

- RELI 122 *Interpreting the Bible*
 RELI 200 *The Bible in Western Tradition*
 RELI 302 *Jewish-Christian Dialogue*
 RELI 307 *Christian Origins*
 RELI 308 *Canonical Gospels*
 RELI 310 *Pauline Theology*
 RELI 383 *The Dead Sea Scrolls*
 RELI 411 *Introduction to Classical Hebrew I*
 RELI 412 *Introduction to Classical Hebrew II*

University Courses

- UNIV 302 *Communication, Cognition, and Culture*

See AMC (page 231) in the Courses of Instruction section.

Anthropology

The School of Social Sciences

Chair

George E. Marcus

Professors

Benjamin Lee

Roderick J. McIntosh

Susan Keech McIntosh

Stephen A. Tyler

Adjunct Professor

Kathleen R. Gibson

Associate Professors

James D. Faubion

Eugenia Georges (*Acting Chair, Fall '97*)

Julie M. Taylor

Assistant Professor

Kathryn Milun

Degrees Offered: B.A., M.A., Ph.D.

The major in anthropology has two areas of concentration: cultural anthropology and archaeology. The focus in cultural anthropology is on contemporary theoretical issues. By reading primary sources, students gain an exposure to the styles of argument and reasoning of a broad range of theorists. They can then engage in the ongoing discussion and definition of central problems within the field. Fieldwork and ethnography are important in the doctoral research.

In archaeology, the focus is on research skills in the library, the field, and the laboratory. Most students also develop at least one analytical skill, such as remote sensing, archaeological statistics, osteology, or geomorphology, drawing on the university's extensive laboratory and computer facilities.

Students may organize a major in one or both fields or combine a major in anthropology with one in another discipline.

Degree Requirements for B.A. in Anthropology

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in anthropology must:

- Complete a total of 30 semester hours of departmental courses (10 courses)
- Take courses in both archaeology and cultural and linguistic anthropology

With department approval, students may substitute for departmental courses at most 6 hours of courses from outside the major that are related to their plan of study. The department recommends that students intending to pursue graduate study acquire a reading knowledge of one or two European languages.

Honors Program. Majors considering a career in anthropology should apply to the honors program, as should those who wish to include advanced training and an intensive, individual research project in their undergraduate education. Anthropology faculty determine acceptance into the program. More information is available from the department office; see also "Honors Programs" under Academic Regulations (page 34).

Degree Requirements for M.A. and Ph.D. in Anthropology

Because each field of specialization offers different opportunities for training and different research orientations, the department seeks applicants with a defined interest in either cultural anthropology or archaeology; an undergraduate background in anthropology is desirable but not required. Entering students devise a detailed first-year plan of study and provisional plans for succeeding years in consultation with an adviser. The plan should emphasize broad training in the selected field before the eventual definition of a problem for dissertation research. For general university requirements, see Graduate Degrees (pages 72-76).

M.A. Program. Graduate students may earn the M.A. only by obtaining approval of their candidacy for the Ph.D. For the M.A. as a terminal degree, students must complete:

- 30 semester hours of approved course work
- One of the three special papers required for the Ph.D.
- A thesis

Ph.D. Program. For the Ph.D. degree, students must accomplish the following (they should complete the three required papers during their first two years of study):

- Complete three substantial papers, each emphasizing an analytical, research, and writing skill appropriate to their field of specialization
- Demonstrate reading competency in one foreign language
- Prepare a satisfactory proposal for dissertation research, based in substantial part on field research
- Complete and defend the dissertation

Special Options. The department will arrange **seminars and tutorials** on any topic relevant to a student's training; these seminars may be conducted in supervisory consultation with scholars in other disciplines as well as with adjunct faculty. Students interested in the specialized field of **medical anthropology** may take advantage of the extensive resources of the Texas Medical Center through ties established with the University of Texas School of Public Health and Graduate School of Biomedical Sciences; students may earn degree credit for formal courses taken at both schools.

Financial Support. All first-year students receive the same level of support, a combination of graduate fellowships and tuition scholarships. These awards are renewed for a further two years of study.

See ANTH (pages 231-244) in the Courses of Instruction section.

Architecture

The School of Architecture

Dean

Lars Lerup

Professors

William T. Cannady
John J. Casbarian, *Associate Dean*
Gordon G. Wittenberg, Jr.

Associate Professors

Michael Bell
Richard L. Ingersoll
Sanford Kwinter
Spencer W. Parsons
Albert H. Pope

Assistant Professors

David Brown
Fares el-Dahdah
Carlos Jimenez
Lindy Roy
Mark Wamble

Lecturers

James B. Blackburn
Joseph P. Colaco
Louis DeLaura
Wally Ford
Stephen Fox
Alan Fleishacker
James Furr
Elysabeth B. Gamard
Tom Lord

Frank S. White

Visiting Critics

Merrill Aldrich
Natalye Appel
Nonya Grenader
Keith Krumwiede

Visiting Professor

Danny M. Samuels

Degrees Offered: B.A., B.Arch., M.Arch., M.Arch. in Urban Design, D.Arch.

The principal goal of the School of Architecture is to contribute to a more humane environment. The school focuses on teaching and research, the development of a broad liberal education for undergraduates in the allied sciences and arts of architecture, and professional graduate and postgraduate education in architecture and urban design. Intimate student—faculty interaction, academic freedom, and unrestricted institutional cooperation within and outside the university are distinctive qualities of the architecture degree programs at Rice.

The undergraduate programs maintain a balance between academic studies and professional practice. Lectures and other public programs, visiting faculty, scholarly presentations, and the Preceptorship Program, which provides a one-year internship in outstanding architectural offices throughout the U.S., Europe, and Japan, all complement the school's core of distinguished teachers and practitioners.

The graduate programs have three areas of emphasis: architectural design, with particular attention paid to history, theory, and practice; urban design, where the concern is the emerging form of the American city; and research in computer visualization that uses the resources of the state-of-the-art Rice Advanced Visualization Lab.

Degree Requirements for B.A. in Architecture or Architectural Studies

For general university requirements, see Graduation Requirements (pages 17-18). The conditions specified here for each major also satisfy the university distribution requirements.

B.A. in Architecture. This degree program, which requires two years of upper-level studio courses, is for students who anticipate professional studies in architecture at the graduate level, either at Rice through the Fifth Year Program (see below) or elsewhere in a professional master's degree program. Students majoring in architecture must complete a total of 133 semester hours as follows:

- 91 hours chosen from specific architecture and nondepartmental courses
- 15 hours of required foundation courses
- 27 hours of electives

B.A. in Architectural Studies. This degree program is open *only* to those students currently in good standing at the university who have decided to postpone concentrated reprofessional training. It requires upper-level work combining architectural studies with other fields during the third and fourth years in an interdisciplinary curriculum chosen by the individual and approved by an adviser. Students must apply for this major during their second year of undergraduate study. Students majoring in architectural studies must complete a total of 133 semester hours as follows:

- 55 hours chosen from specific architecture and nondepartmental courses
- 15 hours of foundation courses
- 63 hours of electives

Both B.A. Programs. The following conditions apply to degree requirements for both majors. Students must:

- Take architecture studio and technology courses in sequence
- Take prerequisite courses in earlier years to avoid scheduling problems
- Take physical education in the first year (ideally)
- Take 2 electives each from Group II and Group III, making sure to satisfy the full university distribution requirements, particularly in Group II, with the remaining 9 free electives
- Consider all foundation courses as architecture major requirements to be taken regardless of double major status (note that course options for foundation courses to fulfill architecture major requirements may be more limited than those for other majors)
- Make sure that their study plans fulfill the requirements of both the architecture major and university distribution
- Not take as pass/fail any course satisfying the architecture major requirements (including all foundation courses)

Following is a typical course of study for a B.A. in the School of Architecture:

First semester (fall)

ARCH 101 *Principles of Architecture I*
 HART 205 *Introduction to History of Art*
 HUMA 101 *Introduction to Humanities*
 HPER 101 *Physical Education*
 1 approved physics course

Second semester (spring)

ARCH 102 *Principles of Architecture I*
 HART 206 *Introduction to History of Art*
 HUMA 102 *Introduction to Humanities*
 HPER 102 *Physical Education*
 ARCH 132 *Changing Perspectives of Architecture*
 1 approved physics course

Third semester (fall)

ARCH 201 *Principles of Architecture II*
 ARCH 213 *Structural and Construction Systems I*
 HART 345 *Renaissance and Baroque Architecture in Italy*
 Studio art
 1 elective

Fifth semester (fall)

ARCH 301 *Principles of Architecture III*
 ARCH 315 *Structural and Construction Systems III*
 3 electives (1 course in architectural theory)

Seventh semester (fall)

ARCH 401 *Principles of Architecture IV*
 3 electives

Fourth semester (spring)

ARCH 202 *Principles of Architecture II*
 ARCH 214 *Structural and Construction Systems II*
 ARCH 346 *19th- and 20th-Century Architectural History*
 SOSC 102 *Intellectual Foundations of the Social Sciences (or an approved foundation course in social science)*
 1 elective

Sixth semester (spring)

ARCH 302 *Selected Architectural Problems I*
 ARCH 316 *Building Climatology*
 3 electives

Eighth semester (spring)

ARCH 402 *Selected Architectural Problems II*
 3 electives

Degree Requirements for Bachelor of Architecture (B.Arch)

Students awarded a B.A. degree with a major in architecture may apply for the professional Bachelor of Architecture (B.Arch.) program. Admission is contingent upon evaluation of their undergraduate academic record at the end of their fourth year of study. The four-semester Fifth Year Program leading to the B.Arch. degree starts with a two-semester preceptorship, or practicum, assigned by a faculty committee (see list below). Interested students must apply to the Fifth Year Program at the beginning of the final semester needed to complete their B.A. For the B.Arch. degree, students must:

- Complete a B.A. degree with a major in architecture
- Complete 30 semester hours in the Preceptorship Program
- Complete 35 hours of departmental courses, including 2 studio courses and 5 specified electives
- Complete as one of their electives a course in advanced technology and computer design (if they took the course as undergraduates, students may request a substitution)

Following is a typical course of study for the Fifth Year Program leading to a B.Arch. degree:

First semester (fall)

ARCH 500 *Preceptorship Program*

Second semester (spring)

ARCH 500 *Preceptorship Program*

Third semester (fall)

ARCH 601 *Architectural Problems—Studio*
 3 electives

Fourth semester (spring)

ARCH 602 *Architectural Problems—Studio*
 2 electives

Preceptors

Backen Arrigoni & Ross, Inc.
San Francisco, California

Cambridge Seven Associates
Cambridge, Massachusetts

Gensler and Associates
London, England

Gensler and Associates
San Francisco, California

Michael Graves Architects
Princeton, New Jersey

Kohn Pedersen & Fox, Architects
New York, New York

Lake/Flato Architects
San Antonio, Texas

Mitchell Giurgolk
New York, New York

NBBJ
Seattle, Washington

Pei Cobb Freed & Partners
New York, New York

Cesar Pelli & Associates
New Haven, Connecticut

Renzo Piano Building Workshop
Genoa, Italy

Renzo Piano Building Workshop
Paris, France

Robert A. M. Stern Architects
New York, New York

Terry Dwan, Architetto
Milan, Italy

Venturi, Scott-Brown & Associates
Philadelphia, Pennsylvania

Degree Requirements for M.Arch. and M.Arch. in Urban Design

Admission of Rice students to the Master of Architecture (M.Arch.) program is contingent upon evaluation of their undergraduate academic record at the end of their fourth year of study. The M.Arch. is an accredited first professional degree; the M.Arch. in Urban Design requires prior or concurrent completion of accredited B.A. or M.A. degrees. Applicants should contact the dean for specific program descriptions (see Department Information Chart on pages 79-81). For general admissions requirements, see Admission to Graduate Study (page 77), noting that architecture applicants should also include a portfolio of their work.

M.Arch. candidates with a B.A. in disciplines other than architecture typically take seven semesters to complete the degree requirements (see option 1 below). Those with a B.A. in architecture take five semesters (see option 2 below), and those with a B.Arch. degree take three semesters (see option 3 below).

An advanced building design curriculum is the basis for the M.Arch. degree program, which provides students with individualized courses of study having a wide choice of special project, research, and internship opportunities both within and outside the School of Architecture. The graduate program has three major areas of emphasis: architectural design, urban design, and what is essentially a research area in computer visualization.

M.Arch. Option 1. Students entering the graduate program without a previous degree in architecture must complete 130 semester hours, including a *core* curriculum and an *advanced* curriculum, as follows (the studio courses are 10 hours each, and all other courses are 3 hours each):

Core Requirements

First semester (fall)

ARCH 501 Graduate Course Studio I
ARCH 513 Building Technology and
Structures I (not offered 1996-97)
History/theory distribution¹
Techniques distribution²

Second semester (spring)

ARCH 502 Graduate Course Studio II
ARCH 514 Building Technology and
Structures II
History/theory distribution¹
Techniques distribution²

Core Requirements (cont.)**Third semester (fall)**ARCH 503 *Graduate Course Studio III*ARCH 515 *Building Technology and Structures III*History/theory distribution¹ARCH 623 *Professionalism and Management in Architectural Practice***Fourth semester (spring)**ARCH 504 *Graduate Course Studio IV*ARCH 516 *Building Climatology*History/theory distribution¹Techniques distribution²**Advanced Requirements****Fifth semester (fall)**ARCH 601 *Architectural Problems: Studio*

Advanced structures elective

Criticism elective

Other elective

Sixth semester (spring)ARCH 602 *Architectural Problems: Studio*

Criticism elective

Other elective

ARCH 702 *Thesis Preparation***Thesis semester (fall)**ARCH 703 *Thesis Studio*

2 electives

M.Arch. Option 2. Students entering the graduate program with a B.A. degree in architecture must complete 92 semester hours, including a *core* curriculum and an *advanced* curriculum. Specific degree requirements follow (the studio courses are 10 hours each, and all other courses are 3 hours each):

Core Requirements**First semester (fall)**ARCH 503 *Graduate Course Studio III*History/theory distribution¹Techniques distribution²

Technology elective

Second semester (spring)ARCH 504 *Graduate Course Studio IV*History/theory distribution¹Techniques distribution²

Technology elective

Advanced Requirements**Third semester (fall)**ARCH 601 *Architectural Problems: Studio*

Advanced structures elective

Criticism elective

1 other elective

Fourth semester (spring)ARCH 602 *Architectural Problems: Studio*

Criticism elective

1 other elective

ARCH 702 *Thesis Preparation***Thesis semester (fall)**ARCH 703 *Thesis Studio*

2 electives

¹ Courses that can fulfill the four history/theory distribution requirements are:

HART 205 *Introduction to History of Art*HART 206 *Introduction to History of Art*HART 345 *Renaissance and Baroque**Architecture in Italy*ARCH 643 *History of the City*ARCH 646 *History of Modern Architecture*

² Courses that can fulfill the three techniques distribution requirements are:

ARTS 225 *Drawing I*ARCH 620 *History of Building Technology*ARCH 635 *Introduction to Computer**Projects in Architecture*ARCH 653 *Photography for Architects*

NOTE: These courses must be taken or the requirement waived for comparable course work. Waived courses must be substituted using elective courses in the same distribution.

M.Arch. Option 3. Students entering the graduate program with a professional B.Arch. degree must complete 54 semester hours. Specific degree requirements follow (the studio courses are 10 hours each, and all other courses are 3 hours each):

First semester (fall)

ARCH 601 *Architectural Problems: Studio*

History/theory elective

Criticism elective

1 other elective

Second semester (spring)

ARCH 602 *Architectural Problems: Studio*

History/theory elective

Advanced structures elective

ARCH 702 *Thesis Preparation*

Thesis semester (fall)

ARCH 703 *Thesis Studio*

2 electives

Degree Requirements for Ph.D. in Architecture

Admission to the Doctor of Architecture (Ph.D.) program requires a M.Arch. degree. Typically students must complete one and a half years of course work before the qualifying examination. Completing the dissertation and passing the final oral examination takes at least one year.

Candidates should be prepared for advanced analytic and creative work in their specialized field. Preparation may include foreign languages, statistics, or a computer language. Specific requirements are established for the individual student upon admission. After successfully completing all required course work, Ph.D. candidates must:

- Apply for and take the qualifying examination
- Submit an outline of their research program representing an original contribution to knowledge in the field of architecture
- Complete the doctoral dissertation
- Pass the final oral examination

See ARCH (pages 245-250) in the Courses of Instruction section.

Art and Art History

The School of Humanities

Chair

Katherine Drew, *Acting Chair*

Professors

Karin L. Broker
William A. Camfield
Neil Havens
Basilios N. Poulos
George Smith
Geoffrey L. Winningham

Associate Professors

Brian Michael Huberman
Joseph Manca
Hamid Naficy
Linda E. Neagley
John Sparagana
Walter M. Widrig

Assistant Professors

Darra Keeton
Rebecca Mersereau

Distinguished Lecturer

Thomas McEvelley

Degrees Offered: B.A., B.F.A., M.A.

This major offers two tracks of study: one in studio art and one in art history, the latter with concentrations in the Western tradition of European and American art. Courses include listings in studio art, film, and photography (ARTS), history of art listings in both art and architecture (HART), and theater listings (THEA). Graduate study is also available in Asian studies and media studies.

Degree Requirements for B.A. in Art and Art History

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in art and art history must complete 12 departmental courses (36 to 38 semester hours, depending on certain course options). At least half of these courses must be at the 300 or 400 level, and students must take more than half of them at Rice.

Studio Art Track. Course selection in this track is subject to prerequisites and consultation with the studio faculty adviser. Students in the studio art track must take:

- 10 courses in studio art
- 2 courses in the history of art

Art History Track. The department recommends that course work include HART 480/580 *Theoretical Perspectives on the Visual Arts* and that course work taken outside the department include a foreign language. Students in the art history track must take:

- 10 courses in the history of art, with some chronological distribution, including:
HART 205-206 *Introduction to the History of Art*
1 non-Western art course
At least 1 seminar
- 2 courses in studio art

- 1 museum intern course
- 1 course outside the department, approved in advance by the adviser

Double Majors. Double majors must also select one track. These students must take at least 10 departmental courses. Those in the studio art track take 8 courses in studio art and 2 courses in the history of art. Those in the art history track take 8 courses in the history of art (including HART 205-206 *Introduction to the History of Art* and a non-Western art course) and 2 courses in studio art.

Degree Requirements for B.F.A.

Students with a B.A. degree in art from Rice or an equivalent degree from another university may enter the Bachelor of Fine Arts (B.F.A.) program, which consists of a fifth year of intensive study in the creative arts. (Students with a B.A. in a major other than art may, in exceptional cases, be admitted.) Information about application forms, deadlines, and admission standards is available from the chair of the department.

For the B.F.A. degree, students must complete a total of 30 semester hours in approved courses, or the equivalent in approved major electives, at the 300 level or above. In addition to the usual departmental upper-level courses, special fifth-year courses are offered for B.F.A. candidates only.

Degree Requirements for M.A. in Art History

The M.A. in art history has concentrations in the Western tradition of European and American art, and graduate work is possible in media studies and Asian studies. Entering graduate students must pass a reading examination in either French or German. Other languages may be required depending on the course of study. The M.A. degree requires at least 33 semester hours of graduate courses. Students must complete:

- 3 hours of courses in art historical concepts, history, and methods of research
- 9 hours of thesis work (in the second year)
- 21 hours of lecture, seminar, and reading courses

Financial Support. Graduate fellowships and scholarships are awarded on the basis of scholarly achievement and available funds. Graduate students, as part of their training, are expected to render some service as research assistants.

Exhibitions and Arts Programs at Rice

Exhibitions and related activities organized by **Rice University Art Gallery** (Kimberly Davenport, director) enrich the teaching program of the Department of Art and Art History as well as the larger university and Houston community. The **Rice Media Center** mounts several photography exhibitions each year and sponsors the "Rice Cinema" film series, a public film program presented four times a week. Featured films include classic and contemporary titles, independent and experimental films, documentaries, and alternative cinema programs. The film series, which is intimately connected with the curriculum both in media studies and in film and photography production, includes frequent guest lecturers, panel discussions, and media events.

See ARTS (pages 251-255), HART (pages 344-349), and THEA (page 475) in the Courses of Instruction section.

Asian Studies

The School of Humanities and the School of Social Sciences

Professors

Anne C. Klein
 Benjamin Lee
 Fred R. von der Mehden
 Richard J. Smith
 Stephen A. Tyler
Assistant Professor
 Nanxiu Qian
Adjunct Professor
 E. Douglas Mitchell

Lecturers

Lilly C.H. Chen
 Caroline Hounq
 Steven Lewis
 Arun Prakash
 Hiroko Sato
 Insun Yang

Degree Offered: B.A.

This major encourages students to explore a variety of Asian cultures, past and present, from a number of different disciplinary perspectives. Our goal is not only to convey a sense of the richness, diversity, and complex interaction of Asian civilizations but also to show how an understanding of Asia may shed valuable light on Western cultural traditions. The major consists of courses from the schools of the Humanities and Social Sciences, including language classes in Chinese, Japanese, Sanskrit, Hindi, Korean, and Tibetan. A team-taught interdisciplinary course, HUMA 211 *Introduction to Asian Civilizations*, serves as the core of the major.

Requirements: The undergraduate Asian Studies major will consist of 30 hours or more of course work. All majors must take the core course, HUMA 211 (also offered as ASIA 211, HIST 206 and RELI 211), and 9 additional courses drawn from at least three of the departments offering courses in Asian studies.

Degree Requirements for B.A. in Asian Studies

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in Asian studies must complete 30 semester hours or more of major course work, including:

- HUMA 211 *Introduction to Asian Civilizations*
- 9 additional courses drawn from at least three of the departments offering courses in Asian studies (see below)
- 6 courses at the 300 level or above
- One year of an Asian language (this may include Asian languages other than those offered by Rice), though students may count no more than four semesters of Asian languages toward the major

Any changes in the requirements for the major must be approved by the director of Asian studies.

Students may count toward the major one or more independent reading courses (ASIA 401 for the fall and ASIA 402 for the spring) taught by Asian studies faculty in the departments below. Students may also use certain residential college courses to fulfill their major requirements, subject to the approval of the director of Asian studies.

The following courses may be used to satisfy the major requirements (note that a number of these courses are cross-listed):

Anthropology

ANTH 220 *Contemporary Chinese Culture* (also offered as HIST 220)

ANTH 353 *Cultures of India*

Asian Studies

ASIA 211 *Introduction to Asian Civilizations* (also offered as HIST 211, HUMA 211, and RELI 212)

ASIA 344 *Korean Literature* (also offered as HUMA 344, KORE 344, and LING 344)

ASIA 401 and 402 *Independent Reading I and II*

ASIA 412 *Advanced Readings in Classical Chinese Literature* (also offered as CHIN 412 and HUMA 412)

Chinese

CHIN 101 and 102 *Beginning Conversational Chinese I and II*

CHIN 201 and 202 *Beginning Conversational Chinese III and IV*

CHIN 203 and 204 *Beginning Accelerated Chinese I and II*

CHIN 301 and 302 *Intermediate Chinese I and II*

CHIN 330 *Introduction to Traditional Chinese Poetry* (also offered as HUMA 330)

CHIN 332 *Chinese Films and Modern Chinese Literature* (also offered as HUMA 332)

CHIN 334 *Introduction to Traditional Chinese Narrative* (also offered as HUMA 334)

CHIN 335 *Introduction to Classical Chinese Literature* (also offered as HUMA 335)

CHIN 401 and 402 *Chinese Reading and Writing I and II*

CHIN 403 *Reading Chinese Newspapers*

CHIN 412 *Advanced Readings in Classical Chinese Literature* (also offered as ASIA 412 and HUMA 412)

Hindi

HINDI 101 and 102 *Elementary Hindi I and II*

HINDI 201 and 202 *Intermediate Hindi I and II*

HINDI 301 and 302 *Advanced Reading and Comprehension I and II*

History

HIST 206 *Introduction to Asian Civilizations* (also offered as ASIA 211, HUMA 211, and RELI 212)

HIST 219 *Patterns of the Chinese Past*

HIST 220 *Contemporary Chinese Culture* (also offered as ANTH 220)

HIST 250 *Traditional Chinese Culture*

HIST 341 *Early Chinese History*

HIST 342 *Modern Chinese History*

HIST 352 *The Comparative Modernization of China and Japan*

HIST 405 *Issues in Comparative History*

HIST 450 *Traditional Chinese Culture* (enriched version of HIST 250)

History of Art and Architecture

HART 209 *Introduction to Asian Art*

HART 361 *Arts of China*

HART 365 *Arts of Japan*

HART 482 *Buddhism: Art and Faith*

Humanities

HUMA 211 *Introduction to Asian Civilizations* (also offered as ASIA 211, HIST 206, and RELI 211)

HUMA 330 *Introduction to Traditional Chinese Poetry* (also offered as CHIN 330)

HUMA 332 *Chinese Films and Modern Chinese Literature* (also offered as CHIN 332)

HUMA 334 *Introduction to Traditional Chinese Narrative* (also offered as CHIN 334)

HUMA 335 *Introduction to Classical Chinese Literature* (also offered as CHIN 335)

HUMA 344 *Korean Literature* (also offered as ASIA 344, KORE 344, and LING 344)

HUMA 412 *Advanced Readings in Classical Chinese Literature* (also offered as ASIA 412 and CHIN 412)

Japanese

JAPA 101 and 102 *Elementary Japanese I and II*

JAPA 201 and 202 Intermediate
Japanese I and II
JAPA 301 and 302 Advanced Japanese
Reading and Composition I and II
Korean
KORE 101 and 102 Elementary Korean
I and II
KORE 201 and 202 Intermediate Korean
I and II
KORE 301 and 302 Advanced Korean I
and II
KORE 344 Korean Literature (also offered as ASIA 344, HUMA 344, and LING 344)

KORE 345 Linguistic Structure of Korean (also offered as LING 345)

Linguistics
LING 344 Korean Literature (also offered as ASIA 344, HUMA 344, and KORE 344)

LING 345 Linguistic Structure of Korean (also offered as KORE 345)

LING 351 and 352 Introduction to Sanskrit I and II (also offered as SANS 301 and 302)

LING 440 The Chinese Novel
LING 443 Topics in Chinese Linguistics
Political Science
POLI 351 Politics of Southeast Asia
POLI 353 Reforms in Post-Mao China
POLI 460 Seminar in Comparative Government
Religious Studies
RELI 211 Introduction to Asian Civilizations (also offered as ASIA 211, HIST 206, and HUMA 211)

RELI 322 Introduction to Buddhism
RELI 325 Buddhism and the Female
RELI 330 Introduction to the Tibetan Language (also offered as TIBT 330)

RELI 470 Buddhist Wisdom Texts
RELI 471 Buddhist Meditation Theory
RELI 532 Introduction to the Tibetan Language (also offered as TIBT 532)

RELI 570 Buddhist Wisdom Texts
(enriched version of RELI 470)

RELI 571 Buddhist Meditation Theory
(enriched version of RELI 471)

RELI 572 Introduction to Buddhism
(enriched version of RELI 322)

Sanskrit
SANS 301 and 302 Elementary Sanskrit I and II (also offered as LING 351 and 352)

Tibetan
TIBT 330 Introduction to the Tibetan Language (also offered as RELI 330)

TIBT 532 Introduction to the Tibetan Language (also offered as RELI 532)

See ASIA (page 255) in the Courses of Instruction section.

Biosciences

Biochemistry & Cell Biology

The Wiess School of Natural Sciences

Chair

Frederick B. Rudolph

Professors

Kathleen Beckingham
George N. Bennett
Zenaido Camacho
James Wayne Campbell
Raymon M. Glantz
Jordan Konisky
Kathleen Shive Matthews
John Steven Olson
Graham A. Palmer
George N. Phillips, Jr.
George J. Schroepfer, Jr.
Charles R. Stewart

Associate Professors

Janet Braam
Richard H. Gomer

Michael C. Gustin

Michael Stern

Assistant Professors

Bonnie Bartel
Eugenio L. de Hostos
Susan L. Gibson
Seiichi P.T. Matsuda
Edward P. Nikonowicz
Scott F. Singleton

Lecturer/Laboratory

Coordinator

Bruce F. Cooper

Adjunct Professor

Florante A. Quiocho

Distinguished Faculty Fellow

Quentin H. Gibson

Ecology and Evolutionary Biology

The Wiess School of Natural Sciences

Chair

Ronald L. Sass

Professors

Frank M. Fisher, Jr.
Paul A. Harcombe
David C. Queller
Joan E. Strassmann
Stephen Subtelny
Calvin H. Ward

Adjunct Professors

Guy N. Cameron
Fred T. Turner

Huxley Fellows

Mark Fulton
Barry Sullender

Lecturer/Laboratory

Coordinators

David R. Caprette
Alan Thornhill

Degrees Offered: B.A., M.A., Ph.D.

The undergraduate curriculum in the biosciences is administered jointly by two departments: the Department of Biochemistry & Cell Biology and the Department of Ecology and Evolutionary Biology. This curriculum offers majors in biochemistry and in biology. Courses in the biosciences include animal behavior, animal biology, biochemistry, biophysics, cell biology, developmental biology, ecology, endocrinology, evolutionary biology, genetics, immunology, microbiology, molecular biology, neurobiology, plant biology, and advanced courses in other related areas.

The graduate programs in biochemistry and cell biology focus on topics in biochemistry, biophysics, cell biology, development, genetics, molecular biology, and neurobiology. In the ecology and evolutionary biology program, the focus is on behavior, biogeochemistry, molecular evolution, plant community ecology, population biology, sociobiology, and wetland ecosystems.

Degree Requirements for B.A. in Biosciences

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in biosciences must complete at least 48 semester hours of courses at the 300 level or higher. The total semester hours at graduation should be at least 129 hours (128 hours if students choose the PHYS 101-102 option, and 132 hours if they choose the MATH 111-112 option). All biosciences majors must complete the following:

Mathematics

MATH 101 and 102 *Single Variable Calculus I and II*
MATH 211 *Ordinary Differential Equations and Linear Algebra*

BIOS 211 *Introductory Lab in Biological Sciences* (2 credit hours)
BIOS 213 *Introductory Lab in Ecology and Evolutionary Biology*
BIOS 311 *Lab in Protein Purification*

Chemistry

CHEM 101-102 *General Chemistry*
CHEM 105 *Introductory Lab in Quantitative Chemistry*
CHEM 211-212 *Organic Chemistry*
CHEM 213-214 *Organic Chemistry Lab*

Any 2 of the following courses:

BIOS 312 *Lab Module in Molecular Biology I*
BIOS 313 *Lab Module in Molecular Biology II*
BIOS 314 *Lab in Cell and Developmental Biology*
BIOS 315 *Lab in Physiology*
BIOS 316 *Lab in Ecology*
BIOS 317 *Lab in Behavior*
BIOS 318 *Lab in Microbiology*
BIOS 530 *NMR Spectroscopy*
BIOS 531 *Optical Spectroscopy*
STAT 305 *Introduction to Statistics for Biosciences*

Physics

PHYS 125 and 126 *General Physics I and II*

Biological Sciences

BIOS 201-202 *Introductory Biology*
BIOS 301-302 *Biochemistry*

Options. Students may substitute BIOS 310 for one of the elective BIOS lab courses if they take it for at least 2 credits. They may substitute HONS 470/471 for BIOS 310 in meeting this requirement if the research supervisor is from one of the biosciences departments. Students may substitute MATH 111 *Fundamental Theorem of Calculus* and MATH 112 *Calculus and Its Applications* for MATH 101. They may substitute CHEM 111-112 *Principles of Chemistry* for CHEM 101-102. Although PHYS 125 and

126 are the preferred physics courses for biosciences majors, students who want to keep open the option of a different major may satisfy the physics requirement by taking PHYS 101 or 111 *Mechanics* and PHYS 102 or 112 *Electricity and Magnetism* (with their labs). If students use STAT 305 to satisfy one of the lab course requirements, they may not also use it to satisfy a lecture course requirement.

Course Sequence. Students should take the 100-level mathematics and chemistry courses in their freshman year; the 100-level physics courses and the 200-level biosciences courses in either their freshman or their sophomore year; and the 200-level chemistry courses in their sophomore year. Those with a weak background in chemistry should complete CHEM 101-102 before taking BIOS 201-202. Taking BIOS 201-202 while freshmen gives students earlier access to upper-level courses.

Undergraduate Research. Undergraduate majors are encouraged, but not required, to pursue independent supervised research in BIOS 401-402 *Undergraduate Honors Research*; those who do must register concurrently in BIOS 411-412 *Undergraduate Research Seminar* and complete a thesis. Students may also undertake research projects in BIOS 310 *Undergraduate Independent Study* and HONS 470-471 (see Honors Programs on page 34).

Biochemistry Major. Students majoring in biochemistry must take the following in addition to the courses listed above that are required of all biosciences majors (see listings in the Courses of Instruction section for Group A and B designations):

- BIOS 352 *Physical Chemistry for Biosciences* (or CHEM 311-312 *Physical Chemistry*)
- BIOS 481 *Molecular Biophysics*
- Two additional biosciences courses from Group A, at least one of which must be BIOS 341 *Cell Biology* or BIOS 344 *Molecular Biology and Genetics*
- 1 course for 3 or more hours at the 200 level or higher in mathematics, physics, computer science, statistics, or computational and applied mathematics
- 1 upper-level course for 3 or more hours in chemistry or biosciences from those listed as Group A

Students may substitute one semester of honors research, BIOS 401 or 402, for one of the elective courses from Group A if their faculty supervisor is from the Department of Biochemistry & Cell Biology. The recommended courses for those taking a limited number of Group A courses are BIOS 341 *Cell Biology* and BIOS 344 *Molecular Biology and Genetics*. Biochemistry majors are assigned an adviser from the Biochemistry & Cell Biology Department.

Biology Major. Students majoring in biology must take the following in addition to the courses listed above that are required of all biosciences majors (see listings in the Courses of Instruction section for Group A and B designations):

- 2 biosciences courses from Group A
- 1 biosciences course from Group B
- 3 additional biosciences courses from Groups A and/or B

Students may substitute STAT 305 *Introduction to Statistics for Biosciences* for one of the last 3 courses. Those planning research careers should take STAT 305.

Students may also substitute one semester of honors research, BIOS 401 or 402, for one of the courses from Group A (if their faculty supervisor is from the Department of Biochemistry & Cell Biology) or from Group B (if their supervisor is from the Department of Ecology and Evolutionary Biology). The recommended courses for those taking a limited number of Group A courses are BIOS 341 *Cell Biology*, BIOS 344 *Molecular Biology and Genetics*, and BIOS 352 *Physical Chemistry for Biosciences*.

Students may specialize in ecology and evolutionary biology or in cell and molecular biology by choosing the 3 additional biosciences courses from Group B or from Group A, respectively. Specialization is not required, and students may switch tracks if they wish. Biology majors are assigned an adviser from one of the two biosciences departments according to their specialization; those electing a general biology program may request advisers from either department. Students interested in environmental careers should consult with the Ecology and Evolutionary Biology department for a list of recommended courses.

Admission Requirements for Accelerated B.A./Ph.D. Program in Biochemistry & Cell Biology

Qualified undergraduates at Rice may apply for admission to the biochemistry and cell biology graduate program in their senior year. This allows them to complete certain course requirements for graduate studies at the same time as their upper-level undergraduate degree requirements; laboratory research performed as part of their undergraduate thesis project can serve as the initial phases of their Ph.D. thesis work. Students thus should be able to obtain their Ph.D. degree more quickly—approximately three years after earning their B.A. degree.

Criteria for admission include academic performance (grade point average of 3.30 or higher), high scores on the Graduate Record Examination (GRE), motivation, previous research experience, and personal qualities. The department Graduate Admissions Committee makes the selection.

Interested students must complete two and a half years (or their equivalent) of undergraduate studies at Rice before applying for enrollment in the accelerated B.A./Ph.D. program. To continue in the program, they must:

- Take the GRE before receiving the B.A. degree and earn scores greater than 80 percent in the analytical and quantitative tests
- Maintain a B average in all courses in their senior year

The usual graduate requirements will apply for continuation in the program.

Degree Requirements for M.A. and Ph.D. in Biochemistry & Cell Biology

Admission. Applicants for graduate study in the Department of Biochemistry & Cell Biology must have:

- B.A. degree in biochemistry, biology, chemistry, chemical engineering, physics, or some equivalent
- Strong ability and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations

Although the department offers an M.A. degree in biochemistry and cell biology, only on rare occasions are students who do not intend to pursue the Ph.D. degree admitted to the graduate program. For general university requirements, see Graduate Degrees (pages 72-76).

Both Ph.D. and M.A. Programs. Students complete most of the formal course work in their first year of residence so they can commence thesis research at the end of the second semester. They settle on their exact courses in consultation with the Graduate Advisory Committee. All graduate students must complete the following (unless they have already taken equivalent courses):

BIOS 301-302 *Biochemistry* (lecture)
 BIOS 311 *Lab in Protein Purification*
 BIOS 312 and 313 *Lab in Molecular Biology I and II*
 BIOS 341 *Cell Biology* (lecture)
 BIOS 344 *Molecular Biology and Genetics* (lecture)
 BIOS 352 *Physical Chemistry for the Biosciences* (lecture)

BIOS 575 *Introduction to Research in Biochemistry and Cell Biology*
 BIOS 581-582 *Graduate Seminar in Biochemistry and Cell Biology*
 BIOS 583, 584, 587, 588 *Graduate Seminars for First- and Second-Year Students in Biochemistry and Cell Biology*
 At least 2 additional approved 400-level courses in biological sciences

Students should complete BIOS 583-584 and BIOS 587-588 in their first and second years, respectively, and they will be responsible for the content of those course programs in their admission to candidacy examination (see below). Students also gain teaching experience by serving as discussion leaders and graders in undergraduate sections during their second year. Safety and ethics orientation is provided during the first year.

Evaluation of Progress in Graduate Study. The Graduate Advisory Committee evaluates each student's undergraduate record and identifies any deficiencies to be corrected (usually in the first year). Thesis advisers may require additional course work of a more specialized nature. Students must complete all additional courses before taking the admission to candidacy examination.

At the end of each semester, the department chair in consultation with the committee and faculty reviews student performance in the formal course work; after students complete two semesters at Rice, the entire faculty conducts a review. Students must maintain at least a B average and demonstrate outstanding motivation and potential for research.

Students earning a grade of C+ or lower in any required biosciences course must retake the course and obtain a grade of B- or higher; a B- or higher is also required in at least two 400-level biosciences courses.

Evaluation after the first year includes:

- Continual review of research progress by the thesis research adviser
- A research progress review examination given each year by the student's Research Progress Review Committee
- Presentation of research progress at least once a year until submission of a complete doctoral thesis (in their first two years, students present their research in BIOS 581-582; after that, the faculty member responsible for the seminar program schedules the presentations)
- Completion of an oral admission to candidacy examination before the beginning of the student's sixth semester
- Defense of the Ph.D. thesis research and text in a final public seminar presentation and oral examination attended by the student's Thesis Committee

M.A. Program. All the above requirements and evaluation procedures apply to M.A. candidates with the following exceptions. The research progress review examination held during the M.A. student's second full year, which is identical in format to that for Ph.D. students, replaces the admission to candidacy examination; no other preliminary examination is held before the final oral defense of the master's thesis. M.A. candidates must complete the thesis and make a public oral presentation of their research work to their Thesis Committee and other interested parties, answering subsequent questions posed by the committee.

Degree Requirements for M.A. and Ph.D. in Ecology and Evolutionary Biology

Admission and First Year. Applicants for graduate study in the Department of Ecology and Evolutionary Biology must have:

- B.A. degree or equivalent
- Scores from the Graduate Record Examination (GRE), including the advanced examination in biology
- A strong background in biology
- Completed course work in physics (one year), mathematics (including calculus), chemistry (including organic chemistry), and biochemistry

These requirements do not preclude admission of qualified applicants who have majored in areas other than biology.

Students should make up any deficiencies no later than their first year of residence (including the subsequent summer) but preferably during the summer preceding the first semester of residence. Students must pass an examination during the first year; those entering with an M.A. degree are normally exempt from this exam.

M.A. Program. For the M.A. degree, applicants must complete 30 semester hours of graduate study, including the completion and public defense of a thesis embodying the results of an original investigation.

Ph.D. Program. In addition to the general university requirements for Graduate Degrees (see pages 72-76), applicants for the Ph.D. degree must:

- Complete three or more years of graduate study in ecology and evolutionary biology, with at least two years in residence at Rice
- Maintain a grade average of B or better in courses taken in the department and satisfactory grades in courses taken outside the department
- Perform satisfactorily in teaching assignments for at least two semesters
- Pass the admission to candidacy examination given by the Graduate Advisory Committee (this examination may be oral and/or written)
- Complete an original investigation worthy of publication in a scientific journal and a doctoral thesis
- Publicly defend the doctoral thesis
- Present a departmental seminar on the research

See BIOS (pages 256-262) in the Courses of Instruction section.

Chemical Engineering

The George R. Brown School of Engineering

Chair

Joe W. Hightower

Professors

Constantine Armeniades

Sam H. Davis

Derek C. Dyson

Jesse David Hellums

George J. Hirasaki

Larry V. McIntire

Clarence A. Miller

Mark A. Robert

Ka-Yiu San

Kyriacos Zygorakis

Adjunct Professor

G. D. Fisher

Associate Professors

Walter G. Chapman

Antonios G. Mikos

Jacqueline V. Shanks

Adjunct Associate Professors

Norman F. Carnahan

Waylon V. House

Assistant Professor

Thomas W. Badgwell

Adjunct Assistant Professor

Louise C. Moorhead

Degrees Offered: B.A., B.S., M.Ch.E., M.S., Ph.D.

This major gives undergraduates a sound scientific and technical grounding for further professional development in chemical engineering. Students select from a range of specialties, including applied mathematics, biomedical engineering, biotechnology, environmental quality, kinetics and catalysis, chemical reaction engineering, engineering economics, petroleum production, solid state materials, or polymer science and engineering. Upon completing either the flexible B.A. requirements or the more scientific and professional B.S. requirements, students may apply for a fifth year of study leading to the Master of Chemical Engineering (M.Ch.E.) degree.

Graduate research is possible in a number of areas such as biochemical engineering, reservoir engineering, process control, optimization and systems analysis, applied mathematics, materials science, kinetics, pollution control, and catalysis. A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Administration.

Degree Requirements for B.A. and B.S. in Chemical Engineering

For general university requirements, see Graduation Requirements (pages 17-18). For the **B.A. degree**, students majoring in chemical engineering must complete 73 semester hours of departmental courses, which include prerequisites and laboratory courses. Students should have a total of 135 hours at graduation. A specific B.A. with a double major in chemical engineering and biochemistry is also available and is noted as such on the student's transcript.

The **B.S. degree** is accredited by the Accreditation Board for Engineering and Technology (ABET). A new specific B.S. in chemical engineering with an environmental engineering option is also offered and is noted on the student's transcript. Students majoring in chemical engineering must complete 100 hours in specified courses for a total of 135 hours at graduation. They must complete the following courses:

Chemistry

CHEM 111-112 *Principles of Chemistry*
(or CHEM 101-102 *General Chemistry*)
CHEM 105 *Introductory Lab in Quantitative Chemistry*
CHEM 211-212 *Organic Chemistry*
CHEM 213-214 *Organic Chemistry Lab*
CHEM 311-312 *Physical Chemistry*

Chemical Engineering

CENG 301 *Chemical Engineering Fundamentals*
CENG 302 *Separation Processes*
CENG 303 *MATLAB and MAPLE for Chemical Engineers*
CENG 343 *Chemical Engineering Lab I*
CENG 390 *Kinetics and Reactor Design*
CENG 401 and 402 *Transport Phenomena I and II*
CENG 403 *Equipment Design*
CENG 404 *Process Design*
CENG 411 and 412 *Thermodynamics I and II*
CENG 443 and 444 *Chemical Engineering Lab II and III* (CENG 500 *Undergraduate Research* may be substituted for either CENG 443 or 444)
CENG 470 *Process Dynamics and Control*
CENG 471 *Process Dynamics and Control Lab*

Mathematics

MATH 101 and 102 *Single Variable Calculus I and II*

MATH 211 *Ordinary Differential Equations and Linear Algebra*
MATH 212 *Multivariable Calculus*
(or equivalent honors courses)

Computational and Applied Mathematics

CAAM 210 or 211 *Introduction to Engineering Computation* (to satisfy computing requirements)
CAAM 335 *Foundations of Applied Mathematics I* (or MATH 381 *Introduction to Partial Differential Equations*)

Physics

PHYS 101 or 111 *Mechanics*
PHYS 102 or 112 *Electricity and Magnetism*

Mechanical Engineering

MECH 211 *Engineering Mechanics*

Other Courses

1 approved basic science course
2 courses from the following:
ELEC 241 *Electrical Circuits*
MSCI 301 *Materials Science*
CIVI 300 *Mechanics of Solids*
ENVI 434 *Chemical Transport and Fate in the Environment*
CENG 420 *Biosystems Transport and Reaction Processes*
CENG 503 *Chemical Engineering Processes: Air Pollution*

The undergraduate curriculum is designed so that outstanding students interested in careers in research and teaching may enter graduate school after earning either bachelor's degree.

Prerequisites for Chemical Engineering Courses. Before undergraduates may register for courses in chemical engineering at the 300 level and above, they must satisfy the following prerequisites:

For CENG 301

MATH 101 and 102
CHEM 111-112 (or 101-102)
Co-/Prerequisite: CENG 303

For CENG 302

CENG 301
Co-/Prerequisites: MATH 211 and 212 and CAAM 210 or 211

For CENG 390

CENG 301

MATH 211 and 212

Co-/Prerequisites: CHEM 311 and
CENG 343**For CENG 401**

PHYS 101 and 102

CENG 302

For CENG 402

CENG 401

For CENG 403

CENG 302, 390, 402, and 411

Co-/Prerequisites: CENG 470 and
MECH 211**For CENG 404**

CENG 403

Co-/Prerequisites: CENG 412 and 470

For CENG 411

CHEM 311

CENG 302

Co-/Prerequisite: CHEM 312

For CENG 412

CENG 411

For CENG 470

CENG 390, 401, and 411

In unusual cases, and with the written consent of the instructor, students may register for a course without completing the required prerequisite(s). Waivers, however, are not transferable; for example, if the instructor for CENG 411 waives CHEM 311 for a student, who then completes CENG 411, the student may not proceed to CENG 412 without the further consent of that instructor, since CHEM 311 is also an implied prerequisite for CENG 412.

Degree Requirements for M.Ch.E., M.S., and Ph.D. in Chemical Engineering

For general university requirements, see Graduate Degrees (pages 72-76).

M.Ch.E. Program. For the M.Ch.E. degree, students must complete during their undergraduate or graduate studies:

- At least 6 upper-level courses in chemical engineering
- Two semesters of chemical engineering design
- Courses in process control and computer science
- 1 approved mathematics course

M.S. Program. Candidates for the M.S. degree must:

- Complete at least 18 approved semester hours with high standing
- Submit an original research thesis
- Defend the thesis in a public oral examination

Ph.D. Program. Candidates for the Ph.D. degree must:

- Demonstrate competence in the areas of applied mathematics, thermodynamics, transport processes, and chemical kinetics and reactor design by passing qualifying examinations, usually during the first year of study
- Complete at least 36 approved semester hours with high standing (with department approval, the course requirements may be reduced to 24 hours for students already holding an M.S. degree)
- Submit a thesis that provides evidence of their ability to carry out original research in a specialized area of chemical engineering
- Defend the thesis in a public oral examination

See CENG (pages 269-273) in the Courses of Instruction section.

Chemistry

The Wiess School of Natural Sciences

Chair

Graham P. Glass

Professors

Andrew R. Barron
W. Edward Billups
Philip R. Brooks
Marco A. Ciufolini
Robert F. Curl, Jr.
Paul S. Engel
James L. Kinsey
John L. Margrave
Ronald J. Parry
Ronald L. Sass
George J. Schroeffer, Jr.
Gustavo E. Scuseria
Richard E. Smalley
R. Bruce Weisman
Kenton H. Whitmire
Lon J. Wilson

Adjunct Professors

Peter W. Harland
Edward F. Hayes
Donald T. Sawyer
M. Robert Willcott

Associate Professor

John S. Hutchinson

Assistant Professors

Vicki L. Colvin
Seiichi P. T. Matsuda
Scott F. Singleton

Distinguished Faculty Fellow

Robert H. Hauge

Faculty Fellows

Daniel Colbert
Bruce R. Johnson

Degrees Offered: B.A., M.A., Ph.D.

Recognizing the wide range of studies encompassed by chemistry, the department encourages undergraduates to explore offerings in other departments such as mathematics, computational and applied mathematics, biochemistry, and physics as well as upper-level courses in chemistry. An interdepartmental major is offered in chemical physics. Taking advantage of the department's extensive array of modern instrumentation, each chemistry major carries out a program of individual research under the supervision of a faculty member.

Graduate studies emphasize individual research, together with a fundamental understanding of chemistry beyond the students' specific interests. Faculty research interests include the synthesis and biosynthesis of organic natural products, the synthesis of small cycloalkanes, molecular recognition and biological catalysis, bioinorganic and organometallic chemistry, the chemistry of group 13 (III) elements, high-pressure and high-temperature chemistry, fluorine chemistry, chemical vapor deposition, the design of nanophase solids, molecular photochemistry and photophysics, infrared kinetic spectroscopy, laser and NMR spectroscopy, the study of oriented molecular beams, theoretical and computational chemistry, and the study of giant fullerene molecules and fullerene nanowires.

Degree Requirements for B.A. in Chemistry

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in chemistry must have a total of at least 127 semester hours at graduation, including the following courses required of all majors:

Core Courses

Chemistry

CHEM 101-102 *General Chemistry*
(or CHEM 111-112 *Honors Chemistry*)
CHEM 105 *Introductory Lab in Quantitative Chemistry*
CHEM 211-212 *Organic Chemistry*
CHEM 213-214 *Organic Chemistry Lab*
CHEM 311-312 *Physical Chemistry*
CHEM 313 *Experiments in Physical Chemistry*
CHEM 314 *Advanced Instrumental Lab*
CHEM 360 *Inorganic Chemistry*
CHEM 403 *Advanced Organic Lab*
CHEM 491 *Research for Undergraduates*

Mathematics

MATH 101 and 102 *Single Variable Calculus I and II*
MATH 211 *Ordinary Differential Equations and Linear Algebra*
MATH 212 *Multivariable Calculus*
(or MATH 221 and 222 *Honors Calculus III and IV*)

Physics

PHYS 101 or 111 *Mechanics*
PHYS 102 or 112 *Electricity and Magnetism*
(PHYS 201 *Waves and Optics* and PHYS 202 *Modern Physics* recommended)

Other

NSCI 230 *Computation in the Natural Sciences* (or equivalent)

Additional Courses

At least 2 courses from the following:

CHEM 401 *Advanced Organic Chemistry*
CHEM 430 *Quantum Chemistry*
CHEM 495 *Transition Metal Chemistry*

6 hours in upper-level courses (from chemistry, physics, mathematics, computational and applied mathematics, biochemistry, or other subjects with adviser approval)

Students must take at least 3 hours of research (CHEM 491) in no less than 2-hour segments. With department approval, students may satisfy this requirement with HONS 470-471, which requires participation in CHEM 491 meetings. Students may also satisfy 3 of the 6 required hours in upper-level courses with additional research.

American Chemical Society Certification. The Rice Department of Chemistry is on the approved list of the Committee on Professional Training of the American Chemical Society and so can certify that graduates have met the appropriate standards. For certification, students must complete:

- All core courses (see above)
- CHEM 495 *Transition Metal Chemistry*
- Either CHEM 401 *Advanced Organic Chemistry* or CHEM 430 *Quantum Chemistry*
- 9 hours in upper-level courses from chemistry, physics, mathematics, computational and applied mathematics, biochemistry, or other approved subjects

A foreign language, preferably German, is recommended.

Chemical Physics Major. The chemical physics major is offered in conjunction with the Department of Physics; faculty advisers are Professor Hutchinson in chemistry and Professor Stevenson in physics. Students take upper-level courses in both chemistry and physics, focusing on the applications of physics to chemical systems. Students majoring in chemical physics must complete the following courses:

Core Courses

Chemistry

CHEM 101-102 *General Chemistry*
(or CHEM 111-112 *Honors Chemistry*)
CHEM 105 *Introductory Lab in*
Quantitative Chemistry
CHEM 211-212 *Organic Chemistry*
CHEM 213-214 *Organic Chemistry Lab*
CHEM 311-312 *Physical Chemistry*

Physics

PHYS 101 or 111 *Mechanics*
PHYS 102 or 112 *Electricity and Magnetism*
PHYS 201 *Waves and Optics*
PHYS 202 *Modern Physics*
PHYS 231 *Elementary Physics Lab II*
PHYS 301 *Intermediate Mechanics*
PHYS 302 *Intermediate Electrodynamics*
PHYS 311 and 312 *Introduction to Quantum Physics I and II*

Mathematics

MATH 101 and 102 *Single Variable Calculus I and II*
MATH 211 *Ordinary Differential Equations and Linear Algebra*
MATH 212 *Multivariable Calculus*
(or MATH 221 and 222 *Honors Calculus III and IV*)

Additional Courses

1 pair of courses from the following:

PHYS 331 *Junior Physics Lab I* and
PHYS 332 *Junior Physics Lab II*
CHEM 313 *Experiments in Physical Chemistry* and CHEM 314
Advanced Instrumental Lab

2 semesters of mathematics or computational and applied mathematics at the 300 level or above

Admission Requirements for Accelerated B.A./Ph.D. Program in Chemistry

The high level of training provided in the Rice B.A. program enables certain especially qualified undergraduates to enter an accelerated program that allows them to complete a Ph.D. degree within two or three years after receiving their B.A. degree. Students electing this option must begin their research during the summer following their junior year and continue the research by taking CHEM 491 during their senior year. Students specializing in organic chemistry should also start taking cumulative examinations during the senior year.

Degree Requirements for M.A. and Ph.D. in Chemistry

For general university requirements, see Graduate Degrees (pages 72-76). Students who have completed course work equivalent to that required for a B.A. in chemistry may apply for admission to the Ph.D. program. For more information, see Admission to Graduate Study (page 77).

M.A. Program. Students are NOT normally admitted to study for an M.A. degree. However, this degree is sometimes awarded to students who do not wish to complete the entire Ph.D. program. Candidates for the M.A. degree must:

- Complete 6 one-semester courses
- Produce a thesis that presents the results of a program of research approved by the department
- Pass a final oral examination

Ph.D. Program. The Ph.D. is primarily a research degree. Graduate education is aimed at developing each student's ability to conduct independent, creative research and to develop habits of inquiry that will ensure continuing intellectual development throughout their careers. The completion of the Ph.D. program is expected to take no more than five years of full-time study. Ph.D. students must:

- Complete 6 one-semester courses
- Pass 2 oral examinations, the first involving a presentation of the student's research progress to date and the second a presentation of an original research proposal
- If specializing in organic chemistry, pass 5 cumulative examinations (which are given periodically)
- Submit and defend a publishable thesis that represents an original and significant contribution to the field of chemistry

See CHEM (pages 273-276) in the Courses of Instruction section.

Civil Engineering

The George R. Brown School of Engineering

Chair

Ahmad J. Durrani

Professors

John E. Merwin

Ronald P. Nordgren

Pol D. Spanos

Anestis S. Veletsos

Associate Professor

Joel P. Conte

Panajiotis (Panos) Christos

Dakoulas

Assistant Professor

Michael Terk

Lecturers

Prabadh V. Banavalkar

Narendra K. Gosain

Milton Hanks

Pat H. Moore

John M. Sedlak

Ed Segner, III

Degrees Offered: B.A., B.S.C.E., M.C.E., M.S., Ph.D.

The profession of civil engineering involves the development, planning, design, construction, and operation of large facilities and systems. These include buildings, bridges, and other structures, as well as systems for transportation, water supply, drainage and flood control, and waste disposal and pollution control. Also part of this field is the planning of new and the redevelopment of existing civil infrastructure. Students in the professional degree program (B.S.C.E.) may opt for either the basic program or a specialized environmental engineering option.

The research interests of the civil engineering faculty lie in the areas of structural engineering and mechanics, earthquake engineering, geotechnical engineering, and computer-aided design. These include structural dynamics, offshore technology, applications of probability theory, random vibrations, structural control, and the behavior of components and structural systems. Other interests include experimental dynamics, studies of reinforced concrete structural assemblies, the mechanical properties of soil, and the mechanics of solids. A joint M.B.A./Master of Civil Engineering degree is also available in conjunction with the Jessie H. Jones Graduate School of Administration.

Degree Requirements for B.A. and B.S.C.E. in Civil Engineering

For general university requirements, see Graduation Requirements (pages 17-18). For the **B.A.** degree, students majoring in civil engineering must have a total of at least 120 semester hours at graduation. The B.A. is not accredited as a professional degree; detailed requirements are available from the department office.

The **B.S.C.E.** degree is a professional degree accredited by the Accreditation Board for Engineering and Technology (ABET). Students may choose between a basic program and the more specialized environmental engineering option offered in conjunction with the Department of Environmental Science and Engineering (see below). For the B.S.C.E. degree, students must have a total of at least 134 semester hours at graduation, including the following required courses:

Basic Program**Mathematics**

MATH 101 and 102 *Single Variable Calculus I and II*

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus*

Physics

PHYS 101 *Mechanics* (with lab)

PHYS 102 *Electricity and Magnetism* (with lab)

Chemistry

CHEM 101-102 *General Chemistry*

Computational and Applied**Mathematics**

CAAM 210 or CAAM 211 *Introduction to Engineering Computation*

CAAM 335 *Foundations of Applied Mathematics*

(or CAAM 353 *Computational Numerical Analysis*)

CAAM 381 *Introduction to Applied Probability*

(or STAT 310 *Probability and Statistics*)

Additional Fields

MECH 200 *Classical Thermodynamics*
(or ELEC 242 *Introduction to Circuits and Electronics*)

MSCI 301 *Materials Science*

1 course from the following:

CHEM 211 *Organic Chemistry*

GEOL 101 *The Earth*

GEOL 102 *Evolution of the Earth*

ENVI 201 *Introduction to Environmental Systems*

SPAC 203 *Atmosphere, Weather, and Climate*

PHYS 201 *Waves and Optics*

BIOS 201 *Introductory Biology*
(or BIOS 202 *Introductory Biology*)

Civil Engineering

CIVI 211 *Engineering Mechanics*

CIVI 251 *Plane Surveying*

CIVI 300 *Mechanics of Solids*

CIVI 302 *Strength of Materials Lab*

CIVI 304 and 305 *Structural Analysis I and II*

CIVI 306 *Steel Design*

CIVI 363 *Applied Fluid Mechanics*

CIVI 400 *Mechanics of Solids II*

CIVI 403 *Reinforced Concrete Design*

CIVI 404 *Concrete Lab*

CIVI 451 *Introduction to Transportation*

CIVI 464 *Hydrology and Watershed Analysis*

CIVI 470 *Basic Soil Mechanics*

CIVI 530 *Concrete Building Design*

(or CIVI 540 *Steel Building Design*)

ENVI 403 *Principles of Environmental Engineering*

Electives

1 approved elective at the 400 or 500 level in civil engineering or a closely related area

Environmental Engineering Option**Mathematics**

MATH 101 and 102 *Single Variable Calculus I and II*

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus*

Computational and Applied**Mathematics**

CAAM 210 or CAAM 211 *Introduction to Engineering Computation*

CAAM 335 *Foundations of Applied Mathematics*

(or CAAM 353 *Computational Numerical Analysis*)

CAAM 381 *Introduction to Applied Probability*

(or STAT 310 *Probability and Statistics*)

Physics

PHYS 101 *Mechanics* (with lab)
 PHYS 102 *Electricity and Magnetism*
 (with lab)

Biological Sciences

BIOS 201 *Introductory Biology*
 (or BIOS 202 *Introductory Biology*)

Chemistry

CHEM 101-102 *General Chemistry*
 CHEM 105 *Introductory Lab in Quantitative Chemistry*

1 course from the following:

GEOL 341 *The Oceans*
 GEOL 352 *Engineering Geology*
 CHEM 212 *Organic Chemistry*
 CHEM 214 *Organic Chemistry Lab*
 CHEM 311 *Physical Chemistry*

Civil Engineering

CIVI 211 *Engineering Mechanics*
 CIVI 300 *Mechanics of Solids*
 CIVI 302 *Strength of Materials Lab*
 CIVI 304 *Structural Analysis I*
 CIVI 306 *Steel Design*
 CIVI 363 *Applied Fluid Mechanics*
 CIVI 403 *Reinforced Concrete Design*

CIVI 404 *Concrete Lab*
 CIVI 470 *Basic Soil Mechanics*

Environmental Science and Engineering

ENVI 201 *Introduction to Environmental Systems*
 ENVI 401 *Introduction to Environmental Chemistry*
 ENVI 403 *Principles of Environmental Engineering*
 ENVI 412 *Hydrology and Watershed Analysis*
 ENVI 434 *Chemical Transport and Fate in the Environment*

3 courses from the following:

ENVI 518 *Groundwater Hydrology*
 ENVI 525 *Environmental Microbiology*
 ENVI 530 *Physical-Chemical Processes in Environmental Engineering*
 ENVI 536 *Biological Processes*
 (or approved course)

The department also recommends CIVI 320 *Ethical Decision Making for Engineers* and CIVI 322 *Engineering Economics and Management*.

More information on the undergraduate program in civil engineering, including a recommended course of study by semester and suggestions for electives, is available from the department office. Upon declaring a civil engineering major, each student formulates a study plan in consultation with the department adviser.

Degree Requirements for M.C.E., M.S., and Ph.D. in Civil Engineering

Although the B.S.C.E. is a suitable terminal degree for students interested in a professional career, a master's degree (M.C.E.) is also highly desirable. Students seeking a career in teaching or in research and development should complete the Ph.D. degree. The M.S. and Ph.D. programs give special attention to developing student interest in, and ability for, independent study and research. Students may pursue graduate studies in structural engineering, structural mechanics, and geotechnical engineering. A joint M.B.A./M.C.E. degree is also available in conjunction with the Jesse H. Jones Graduate School of Administration. Involvement in undergraduate teaching is expected of both M.S. and Ph.D. students.

Admission. Applicants should have a B.S.C.E. with a significant emphasis on structural engineering, but students with other undergraduate degrees may apply if they have adequate preparation in mathematics, mechanics, and structural analysis and design. Courses such as engineering technology or construction technology, however, do not represent adequate preparation.

M.C.E. Program. For general university requirements, see Graduate Degrees (pages 72-76). To earn a M.C.E. degree, students must:

- Complete 30 semester hours of approved courses

M.B.A./M.C.E. Program. For general university requirements, see Graduate Degrees (pages 72-76). See also Accounting and Administrative Science. To earn a M.B.A./M.C.E. degree, students must:

- Complete 24 semester hours of civil engineering courses
- Complete 52 semester hours of business administration courses

M.S. Program. For general university requirements, see Graduate Degrees (pages 72-76). To earn a M.S. degree, students must:

- Complete at least 24 semester hours of approved courses
- Produce an acceptable thesis
- Pass a final oral examination on the thesis

Students intending to extend their studies into the Ph.D. degree program should note that the department does not grant an automatic M.S. degree to candidates who have not written a satisfactory master's thesis.

Ph.D. Program. For general university requirements, see Graduate Degrees (pages 72-76). To earn a Ph.D. degree, students must:

- Complete at least 48 semester hours of approved courses with high standing
- Pass a comprehensive preliminary examination testing the candidate's knowledge of the field and ability to think in a creative manner
- Pass an oral qualifying examination on the proposed thesis research and related topics
- Complete a thesis that constitutes an original contribution to knowledge
- Pass a final public oral examination on the thesis and related topics

Should the department faculty conclude, at any stage of the doctoral program, that a student is unqualified to continue, the student is dismissed.

See CIVI (pages 278-282) in the Courses of Instruction section.

Classics

The School of Humanities

Professor

Harvey Yunis

Associate Professor

Kristine Gilmartin Wallace

Assistant Professor

Hilary S. Mackie

Lecturer

Deborah Beck

Degree Offered: B.A.

Formally administered by the Department of Hispanic and Classical Studies, the classics major explores the languages, literature, history, and culture of ancient Greece and Rome. Students may elect to concentrate on either Latin or classics, which involves the study of ancient Greek as well as Latin. Both concentrations emphasize the study of the literature of Greek and Roman civilizations in the original languages. Additional "classical studies" courses use English translations to explore various aspects of classical civilizations.

The classics major provides an essential base for further graduate work in classics, ancient history, ancient philosophy, ancient religion (especially early Christianity), and ancient art history. A secondary teaching certificate awarded in conjunction with the B.A. is available through the Department of Education. Further information on the classics major is available from faculty members. Faculty also help students arrange travel to Greece or Italy, whether to work on a dig or to study at the Intercollegiate Center for Classical Studies in Rome.

Degree Requirements for B.A. in Classics

For general university requirements, see Graduation Requirements (pages 17-18).

Classics Majors. Students majoring in classics (both Greek and Latin) must complete 27 semester hours of departmental courses as follows:

- 21 hours (7 courses) in Greek and Latin at the 200 level or above
- At least 6 hours (2 courses) in each language
- 3 hours (1 course) at the 300 level in classical studies or from another department in one of the following: Greek and Roman philosophy, art, history, or religion
- LATI 493 *Comprehensive Examination* in the spring semester of the senior year

Latin Majors. Students majoring in Latin must complete 24 semester hours of departmental courses as follows:

- 18 hours (6 courses) in Latin at the 200 level or above
- 3 hours (1 course) at the 300 level in classical studies or from another department in one of the following: Greek and Roman philosophy, art, history, or religion
- LATI 493 *Comprehensive Examination* in the spring semester of the senior year

Comprehensive Examination. Students in both concentrations take the comprehensive examination in the last week of their last semester.

See CLAS (pages 282-283), GREE (pages 343-344), and LATI (page 386) in the Courses of Instruction section.

Cognitive Sciences

The School of Social Sciences

Director
Sydney M. Lamb

Professors

Robert S. Cartwright, Jr.
John W. Clark, Jr.
James E. Copeland
Philip W. Davis
Richard E. Grandy
Stephen L. Klineberg
Randi C. Martin
Stephen A. Tyler
Michael Watkins

Associate Professors

Keith DeRose
Suzanne E. Kemmer
David M. Lane
Livia Polanyi
Devika Subramanian

Assistant Professors

Michel Achard
Jeffrey S. Bowers
Addie Dutta
Eric Margolis

Lecturer

Michael Barlow

Degree Offered: B.A.

The cognitive sciences provide a multidisciplinary study of the mind. Researchers in this field seek to understand such mental phenomena as perception, thought, memory, the acquisition and use of language, learning, concept formation, and consciousness.

Projects in the cognitive sciences may involve observing the development of mental skills in children, programming computers to engage in complex problem solving, or analyzing the nature of meaning. Methods include observation and analysis, model building, experimentation, and the computer simulation of mental structures and processes. Some investigators focus on relationships between brain structures and behavior, some work with computer simulation, while others work at more abstract philosophical levels.

Degree Requirements for B.A. in Cognitive Sciences

Students planning to major in cognitive sciences should take one or more of the following courses during the first and second years: PSYC 101 *Introduction to Psychology*, PHIL 103 *Philosophical Aspects of Cognitive Science*, LING 200 *Introduction to the Scientific Study of Language*, PSYC 203 *Introduction to Cognitive Psychology*. Students should try to complete the required 200-level core courses (see below) by the end of their sophomore year.

For general university requirements, see Graduation Requirements (pages 17-18).

Cognitive science majors will be required to take a total of 7 core courses (see below) plus 7 additional courses (from the list below), of which no more nor less than 4 must be from the same department.

Honors program. Students in the honors program will conduct an independent research project of either one or two semesters under the guidance of one or more faculty members in the cognitive sciences program. Students intending to go into this program should consult with one or more faculty about their project before the end of the junior year. Their proposals must be accepted by their adviser(s) and by the Cognitive Sciences Steering Committee by the end of their junior year. Students in the program will enroll

in one or both of CSCI 481 *Honors Project* (fall, 3 hours) and 482 *Honors Project* (spring, 3 hours). Students who undertake a two-semester project will be allowed to continue into the second semester only if their adviser(s) judge(s) that they have made substantial progress during the first semester. At the end of the project, each student in the honors program will make an oral presentation of his/her project at a meeting to which all cognitive science students and faculty will be invited and will submit a final written project report.

Core Courses

Computer Science

COMP 210 *Introduction to Principles of Scientific Computation* (4 hours)
COMP 440 *Artificial Intelligence* or
CSCI 410 *Computational Modeling of Cognitive Processes*

Linguistics

LING 200 *Introduction to the Scientific Study of Language* or LING 300 *Linguistic Analysis*
LING 306 *Language and the Mind* or
LING 315 *Semantics*

Philosophy

PHIL 305 *Mathematical Logic* or PHIL 312 *Philosophy of Mind*

Psychology

PSYC 203 *Introduction to Cognitive Psychology*
PSYC 351 *Psychology of Perception* or
PSYC 362 *Biopsychology*

Additional Courses

Cognitive Sciences

CSCI 390 *Supervised Research in Cognitive Science*
CSCI 410 *Computational Modeling of Cognitive Processes*
CSCI 420 *Brain and Behavior*
CSCI 481-482 *Honors Project*

Computer Science

COMP 210 *Introduction to Principles of Scientific Computation*
COMP 240 *The Age of Intelligent Machines*
COMP 440 *Artificial Intelligence*

Linguistics

LING 200 *Introduction to the Scientific Study of Language*

LING 300 *Linguistic Analysis*

LING 301 *Phonetics and Phonology*

LING 306 *Language and the Mind*

LING 315 *Semantics*

LING 317 *Language and Computers*

LING 402 *Syntax and Semantics*

LING 403 *Modern Linguistic Theory*

LING 411 *Neurolinguistics*

LING 412 *Language and Intelligence*

LING 467 *Computational Projects*

LING 490 *Discourse Analysis*

Philosophy

PHIL 103 *Philosophical Aspects of Cognitive Science*

PHIL 303 *Theory of Knowledge*

PHIL 305 *Mathematical Logic*

PHIL 312 *Philosophy of Mind*

PHIL 353 *Philosophy of Language*

PHIL 357 *Incompleteness, Undecidability, and Computability*

Psychology

PSYC 203 *Introduction to Cognitive Psychology*

PSYC 308 *Memory*

PSYC 309 *Psychology of Language*

PSYC 340 *Research Methods*

PSYC 351 *Psychology of Perception*

PSYC 360 *Thinking*

PSYC 362 *Biopsychology*

Other Departments

ANTH 406 *Cognitive Studies in Anthropology and Linguistics*

BIOS 421 *Neurobiology*

ELEC 481 *Fundamentals of Systems Physiology and Biophysics*

ELEC 498 *Introduction to Robotics*

SOCI 353 *Conceptions of Human Nature*

STAT 300 *Model Building*

See CSCI (page 290) in the Courses of Instruction section.

Computational and Applied Mathematics

The George R. Brown School of Engineering

Chair

Danny C. Sorensen

Professors

John Edward Akin

Robert E. Bixby

Michael M. Carroll

William J. Cook

Sam H. Davis

John E. Dennis

Angelo Miele

Paul E. Pfeiffer

William W. Symes

Richard A. Tapia

Chao-Cheng Wang

Adjunct Professors

Aladin M. Boriek

Michael Andrew Christie

Elmer Eisner

Roland Glowinski

Richard P. Kendall

Martin D. Matthews

Irshad Mufti

Emilio Nuñez

Donald W. Peaceman

Michael Trosset

Phuong A. Vu

Associate Professors

David Applegate

Steven J. Cox

Matthias Heinkenschloss

Yin Zhang

Assistant Professors

Liliana Borcea

Petr Kloucek

Degrees Offered: B.A., M.C.A.M., M.C.S.E., M.A., Ph.D.

Courses within this major can provide foundations applicable to the many fields of engineering, physical sciences, life sciences, behavioral and social sciences, and computer science. Undergraduate majors have considerable freedom to plan a course of study consistent with their particular interests. The professional degree (M.C.A.M.), for persons interested in practicing within this field, emphasizes general applied mathematics, operations research and optimization, and numerical analysis, while the M.A. and Ph.D. programs concentrate on research. Faculty research interests fall in the four general areas of numerical analysis and computation, physical mathematics, operations research and optimization, and mathematical modeling in physical, biological, or behavioral sciences.

A further advanced degree program in computational science and engineering (C.S.E.) addresses the current need for sophisticated computation in both engineering and the sciences. Such computation requires an understanding of parallel and vector capabilities and a range of subjects including visualization, networking, and programming environments. An awareness of a variety of new algorithms and analytic techniques is also essential to maximizing the power of the new computational tools.

A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Administration.

Degree Requirements for B.A. in Computational and Applied Mathematics

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in computational and applied mathematics must complete at least 55 semester hours of departmental courses. The total at graduation should be at least 120 hours. An undergraduate course of study consists of 8 basic courses in mathematics and computer science, introductory courses in appropriate areas of computational and applied mathematics, and electives for which major credit is given, as follows:

Basic Courses

MATH 101 and 102 *Single Variable Calculus I and II*

(or honors equivalent)

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus*

MATH 355 *Linear Algebra*

(or CAAM 310 *Linear Algebra*)

MATH 321 *Introduction to Analysis I*
(or CAAM 321 *Introduction to Mathematical Analysis*)

CAAM 210 or 211 *Introduction to Engineering Computation*

CAAM 353 *Computational Numerical Analysis*

Introductory Courses (1 course each in three of the five following areas)

1. Computation

COMP 210 *Introduction to Principles of Scientific Computation*

COMP 212 *Intermediate Programming*

CAAM 471 *Linear Programming*

CAAM 472 *Game Theory and Decision Analysis*

CAAM 476 *Operations Research—Stochastic Models*

2. Numerical Analysis

CAAM 451 *Numerical Linear Algebra*

CAAM 452 *Computational Methods for Differential Equations*

CAAM 453 *Numerical Analysis—Ordinary Differential Equations*

CAAM 454 *Optimizing Problems in Computational Engineering and Science*

4. Physical Mathematics

CAAM 335 *Foundations of Applied Mathematics I*

CAAM 336 *Foundations of Applied Mathematics II*

MATH 381 *Introduction to Partial Differential Equations*

MATH 382 *Complex Analysis*

3. Operations Research/Optimization

CAAM 378 *Introduction to Operations Research*

CAAM 460 *Optimization Theory*

5. Applied Probability

CAAM 381 *Introduction to Applied Probability*

Area of emphasis.

Each student will select one of the areas above as his or her *area of emphasis*. Then, in consultation with an adviser, he or she will work out a coherent package of 3 to 5 courses (including the one selected under area courses, above) to provide a reasonable foundation in the chosen area of emphasis.

Additional courses to make 55 hours total.

These courses may be additional CAAM courses or appropriate courses selected from other departments to broaden the individual program outside the area requirements or advanced courses from a second major (up to 9 hours). Because of the importance of communication in professional life, each student should consider including a *writing course*, as a free elective, in his or her personal program.

The department also participates in the interdisciplinary program in managerial studies (see page 177).

Degree Requirements for M.C.A.M., M.A., and Ph.D. in Computational and Applied Mathematics

Admission. Admission to graduate study in computational and applied mathematics is open to qualified students holding bachelor's or master's degrees (or their equivalent) in engineering, mathematics, or the physical, biological, mathematical, or behavioral sciences. Department faculty evaluate the previous academic record and credentials of each applicant individually. For general information, see Graduate Degrees (pages 72-76) and Admission to Graduate Study (page 77).

Applicants should be aware that it normally takes one to two years to obtain a master's degree and three to five years to obtain a doctorate (a master's degree is not a prerequisite for the doctoral degree).

M.C.A.M. Program. This professional degree program emphasizes the applied aspects of mathematics. The M.C.A.M. degree requires satisfactory completion of at least 30 semester hours of course work approved by the department.

M.A. Program. Students are encouraged to initiate research at the earliest possible time in their graduate study. For a M.A. in computational and applied mathematics, students must complete:

- At least 30 semester hours (including thesis work) at the graduate level
- 5 courses in computational and applied mathematics (normally)
- An original thesis acceptable to the department
- A public oral examination on the thesis

For students working toward the Ph.D. degree, successful performance on the qualifying examinations fulfills the master's thesis requirement.

Ph.D. Program. As in the M.A. program, students are encouraged to initiate their research as soon as possible. For a Ph.D. in computational and applied mathematics, students must:

- Complete a course of study approved by the department, including at least 2 courses outside the major area
- Perform satisfactorily on preliminary and qualifying examinations and reviews
- Complete 2 courses or a reading examination on an approved foreign language
- Produce an original thesis acceptable to the department
- Perform satisfactorily on a final public oral examination on the thesis

Financial Assistance. Graduate fellowships, research assistantships, and graduate scholarships are available and are awarded on the basis of merit to qualified students. Current practice in the department is for most doctoral students in good standing to receive some financial aid. As an integral part of their scholarship programs, all graduate students are expected to attain some proficiency in teaching within the department.

Degree Requirements for M.C.S.E and Ph.D. in Computational Science and Engineering

C.S.E. Program Area. Recognizing the increasing reliance of modern science and engineering on computation as an aid to research, development, and design, the Department of Computational and Applied Mathematics, in conjunction with the departments of Biochemistry & Cell Biology, Geology and Geophysics, Computer Science, Chemical Engineering, Electrical and Computer Engineering, and Statistics, has established an advanced degree program in an area called computational science and

engineering (C.S.E.). The program focuses attention on modern computational techniques and provides a resource of training and expertise in this area.

The program is administered by a committee of faculty chosen by the deans of engineering and natural sciences, with ultimate oversight by the provost. The Computational Science Committee (CSC) helps students design an appropriate course of study and sets the examination requirements.

Students may enter the C.S.E. program either directly or indirectly through one of the participating departments (see above list). In all cases, however, students must fulfill the admissions requirements of one department, which acts as their associated department. Students then meet the normal requirements for graduate study within that department in every way (including teaching and other duties) except that the curriculum and examination requirements are set by the CSC.

M.C.S.E Program. This program's intent is to produce professional experts in scientific computing able to work as part of an interdisciplinary research team. Training is concentrated in state-of-the-art numerical methods, high-performance computer architectures, use of software development tools for parallel and vector computers, and the application of these techniques to at least one scientific or engineering area. For general university requirements, see Graduate Degrees (pages 72-76).

For the M.C.S.E. degree, students must complete at least 30 semester hours of course work approved by the CSC; no more than two of the courses may be taken at the 300 level, taken outside the C.S.E. program area, or satisfied by transfer credit. Each student's program of study must meet the following requirements:

Required Courses

COMP 412 *Compiler Construction*

ELEC 425 *Computer Systems Architecture*

CAAM 420 *Introduction to Computational Science* (taken in the first semester)

1 course from the following:

CAAM 451 *Numerical Linear Algebra*

CAAM 452 *Computational Methods for Differential Equations*

CAAM 453 *Numerical Analysis—*

Ordinary Differential Equations

CAAM 454 *Optimizing Problems in Computational Engineering and Science*

CAAM 471 *Linear Programming*

Computational Science Electives

4 courses selected from an approved list of COMP or CAAM courses (at least 2 courses at the 500 level)

Open Electives

2 approved courses other than CAAM or COMP courses at the 300 level or above (a computational project taken within a participating department also satisfies this requirement)

Application Areas

An appropriate sequence of courses from a participating application area at the 300 level or above

Ph.D. Program. Study at the doctoral level seeks to advance the field through original research. For general university requirements, see Graduate Degrees (pages 72-76). For the Ph.D. in computational science and engineering, students must:

- Complete a course of study approved by the CSC, including at least 2 courses outside the major area
- Perform satisfactorily on preliminary and qualifying examinations and review
- Complete 2 courses or a reading examination on an approved foreign language
- Produce an original thesis acceptable to the CSC
- Perform satisfactorily on a final public oral examination on the thesis

See CAAM (pages 262-268) in the Courses of Instruction section.

Computer Science

The George R. Brown School of Engineering

Chair

Moshe Y. Vardi

Professors

Robert S. Cartwright, Jr.
Matthias Felleisen
Ronald N. Goldman
G. Anthony Gorry
Kenneth W. Kennedy, Jr.
Willy E. Zwaenepoel

Adjunct Professors

Jack Dongarra
Geoffrey Fox
Micha Hofri
S. Lennart Johnsson

Associate Professors

Keith D. Cooper
Alan L. Cox
Devika Subramanian
Joe D. Warren

Adjunct Associate Professor

Scott K. Warren

Assistant Professors

Peter Druschel
Lydia Kavradi

Adjunct Assistant Professor

P. Read Montague

Faculty Fellows

John M. Mellor-Crummey
Linda M. Torczon

Research Scientists

Vikram Adve
Alan Carle
Michael Fagan
Robert Fowler
Charles Koelbel
Douglas Moore

Lecturers

Ian Barland
Gavin Clarkson

Visiting Scholars

Eng Wee Chionh
Claude Girault
Elisa Viso-Gurovich

Degrees Offered: B.A., M.C.S., M.S., and Ph.D.

Computer science is concerned with the study of computers and computing, focusing on algorithms, programs and programming, and computational systems. The main goal of the discipline is to build a systematic body of knowledge, theories, and models that explain the properties of computational systems and to show how this body of knowledge can be used to produce solutions to real-world computational problems. Computer science is the intellectual discipline underlying information technology, which is widely accepted now as the ascendant technology of the next century. Students in computer science at Rice benefit from the latest in equipment and ideas as well as the flexibility of the educational programs. The research interests of the faculty include algorithms and complexity, artificial intelligence and robotics, compilers, distributed and parallel computation, graphics and visualization, operating systems, and programming languages.

The undergraduate program in computer science has been designed to accommodate a wide range of student interests. The program is sufficiently flexible so a student can customize it to her or his own interests. A student can develop a broad educational program that couples computer science education with a variety of other fields: in engineering, science, the humanities, or social science. Alternatively, a program might be designed for a student preparing for graduate school in computer science or possibly for a career in computing and information technology.

A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Administration.

Degree Requirements for B.A. in Computer Science

For general university requirements, see Graduation Requirements (pages 17-18). The undergraduate program in computer science has been designed to accommodate a wide range of student interests. The program is sufficiently flexible for a student to customize it to her or his interests. A student can develop a broad educational program that couples computer science education with a variety of other fields in engineering, natural sciences, the humanities, or social sciences. Alternatively, a program might be designed for a student preparing for graduate study in computer science or possibly for a career in computing and information technology.

The undergraduate program consists of required core courses, which are introductory courses covering material required of all majors; required breadth courses, which are upper-level courses ensuring knowledge in a broad range of areas; and electives that give students the freedom to explore specific interests. Students majoring in computer science must complete between 59 and 61 semester hours of courses in these three categories.

Core Courses (8 courses for a total of 28 hours, required for all majors, usually taken in the freshman and sophomore years)

MATH 101 and 102 *Single Variable Calculus I and II*
 COMP 210 *Introduction to Principles of Scientific Computation*
 COMP 212 *Intermediate Programming*
 COMP 280 *Mathematics of Computer Science*
 COMP 314 *Applied Algorithms and Data Structures*
 COMP 320 *Introduction to Computer Organization*

1 course from the following:
 MATH 211 *Ordinary Differential Equations and Linear Algebra*
 MATH 212 *Multivariable Calculus*
 MATH 221 *Honors Calculus III*

Breadth Courses (7 courses for a total of 25 hours, required for all majors, usually taken in the junior and senior years)

STAT 310 *Probability and Statistics*
 CAAM 353 *Computational Numerical Analysis*
 CAAM 310 *Linear Algebra*
 (or MATH 355 *Linear Algebra*)
 ELEC 326 *Digital Logic Design*
 COMP 311 *Programming Languages*
 (or COMP 412 *Compiler Construction*)

COMP 481 *Automata, Formal Languages, and Computability*
 (or COMP 482 *Design and Analysis of Algorithms*)
 COMP 421 *Operating Systems and Concurrent Programming*
Electives (2 courses for a total of 6 to 8 hours in computer science at the 300 level or higher)

Transitional Degree Plan. The above represents new requirements for the B.A. degree. Students who matriculated before 1996-97 were required to take COMP 382 *Design and Analysis of Algorithms* and two of COMP 310, 412, and 421. In the current plan, the new course COMP 314 replaces COMP 382, and the new course COMP 482 replaces COMP 310. Students wishing to graduate under the old degree requirements would therefore have to complete COMP 314 and two of COMP 412, 421, and 482. However, students who have already taken COMP 382 should not take either COMP 314 or COMP 482 because material covered in both these courses overlaps significantly with that covered in COMP 382.

Degree Requirements for M.C.S., M.S., and Ph.D. in Computer Science

Master's Programs. For general university requirements, see Graduate Degrees (pages 72-76). The professional M.C.S. degree is a terminal degree for students intending to pursue a technical career in the computer industry. To earn the M.C.S. degree, students must successfully complete 30 semester hours of course work approved by the department and following the plan formulated in consultation with the department adviser.

Areas of concentration for the M.C.S. include algorithms and complexity, artificial intelligence, compiler construction, distributed and parallel computing, graphics and geometric modeling, operating systems, and programming languages. The professional program normally requires three semesters of study.

The M.S. degree is a research degree requiring a thesis in addition to course work.

Ph.D. Program. The Ph.D. degree is for students planning to pursue a career in computer science research and education. The doctoral program normally requires four to six years of study. To earn a Ph.D. in computer science, students must:

- Pass a comprehensive examination covering the core areas of computer science
- Pass a qualifying examination in an area of specialization
- Conduct original research, submit an acceptable thesis proposal, and successfully defend the thesis proposal
- Submit an acceptable thesis that reports research results and pass a final oral defense

Students who successfully meet the first three requirements are awarded the M.S. degree. Students successfully meeting all four requirements, plus any departmental and university requirements, are awarded the Ph.D. degree.

Financial Assistance. Fellowships and research assistantships are available to students in the Ph.D. program. Both provide a monthly stipend for the academic year and cover all tuition expenses. More substantial monthly stipends may be available during the summer for students working on departmental research projects. In all cases, continued support is contingent on satisfactory progress in the program. Ph.D. students also are expected to assist in the teaching and administration of undergraduate and graduate courses.

Additional Information. For further information and application materials, write the Department of Computer Science-MS 132, Rice University, 6100 Main, Houston, Texas 77005-1892.

See COMP (pages 283-289) in the Courses of Instruction section.

Economics

The School of Social Sciences

Chair

George R. Zodrow

Professors

Dagobert L. Brito
Bryan W. Brown
James N. Brown
John B. Bryant
Malcolm Gillis
Peter Reginald Hartley
Peter Mieszkowski
Robin C. Sickles
Gordon W. Smith
Ronald Soligo

Associate Professors

Suchan Chae
Marc Peter Dudey

Adjunct Professors

Bruce M. Lairson
John Michael Swint

Adjunct Associate Professor

Charles E. Begley

Assistant Professors

Yoosoon Chang
Monika Merz
Yuka Ohno
Kei-Mu Yi

Degrees Offered: B.A., M.A., Ph.D.

Undergraduates may major in either economics or mathematical economic analysis. The latter is recommended for students who intend to continue on to graduate work in economics or pursue a business or governmental job in which analytical and quantitative skills are required.

The eight major fields available for graduate study are econometrics, economic development, economic theory, industrial organization and regulation, international trade and finance, labor, macroeconomics and/or monetary theory, and public finance.

Degree Requirements for B.A. in Economics or Mathematical Economic Analysis

For general university requirements, see Graduation Requirements (pages 17-18). Students in either major should have at least 120 total semester hours at graduation. Full information regarding major requirements is available from the department office.

Economics Major. Students majoring in economics must take at least 10 courses: 9 in economics and 1 in quantitative methods (see below). Students may graduate with honors by achieving a B+ (3.33 grade point average) in all economics courses and by writing a senior thesis while taking ECON 403 and 404 *Senior Independent Research* (see Honors Programs on page 34).

Students may transfer no more than 3 of the 9 required economics courses from other schools, and students transferring the equivalent of ECON 211 or 212 *Principles of Economics I or II* must pass a department qualifying exam (additional transfer credits in economics may count toward university graduation requirements but not departmental major requirements). In general, the required course in quantitative analysis may also be transferred; however, ACCO 305 *Introduction to Accounting* cannot be transferred from another institution.

The department strongly recommends that students take two semesters of calculus (MATH 101 and 102 *Single Variable Calculus I and II* or MATH 111 *Fundamental Theorem of Calculus* and MATH 112 *Calculus and Its Applications*) and a course in probability and statistics (ECON 382 *Elements of Statistical Methods*, also offered as STAT 310 *Probability and Statistics*). Failure to take these courses will limit the range of electives available to the student.

Course requirements for the economics major include the following:

All of the following:

ECON 211 and 212 *Principles of Economics I and II*
 ECON 370 *Microeconomic Theory*
 (or ECON 372 *Mathematical Microeconomics*)
 ECON 375 *Macroeconomic Theory*

ECON 451 *Political Economy of Latin America*

ECON 455 *Money and Financial Markets*

ECON 461 *Urban Economics*

ECON 480 *Environmental and Energy Economics*

ECON 483 *Public Finance*

ECON 485-486 *Contemporary Economics Issues*

At least 3 courses from the following:

ECON 301 *History of Economic Analysis*
 ECON 355 *Money and Banking*
 ECON 415 *Human Resources, Wages, and Welfare*
 ECON 416 *Economic History of the U.S.: 1700-1945*
 ECON 417 *Comparative History of Industrialization*
 ECON 420 *International Economics*
 ECON 421 *International Finance*
 ECON 430 *Comparative Economic Systems*
 ECON 435 *Industrial Organization*
 ECON 436 *Government Regulation of Business*
 ECON 438 and 439 *Economics of the Law I and II*
 ECON 440 *Economics of Uncertainty*
 ECON 445 *Managerial Economics*
 ECON 448 *Corporation Finance*
 ECON 450 *World Economic and Social Development*

1 quantitative methods course from the following (or approved equivalent):

ECON 382 *Elements of Statistical Methods*
 ECON 400 *Econometrics*
 ECON 471 *Linear Programming*
 ECON 475 *Integer and Combinatorial Optimization*
 ECON 476 *Operations Research—Stochastic Models*
 CAAM 210-211 *Introduction to Engineering Computation*
 STAT 300 *Model Building*
 STAT 310 *Probability and Statistics*
 STAT 381 *Applied Probability*
 STAT 410 *Introduction to Statistical Computing and Regression*
 STAT 431 *Mathematical Statistics I*
 COMP 212 *Intermediate Programming*
 ACCO 305 *Introduction to Accounting*

Mathematical Economic Analysis Major. Students majoring in mathematical economic analysis must take at least 15 courses (see below). Students may graduate with honors by achieving a B+ (3.33 grade point average) in the 15 courses required for the major and any other economics electives taken. Course requirements for the mathematical economic analysis major include the following:

All of the following:

ECON 211 and 212 *Principles of Economics I and II*
 ECON 372 *Mathematical Microeconomics*
 ECON 375 *Macroeconomic Theory*
 ECON 382 *Elements of Statistical Methods* (STAT 310 *Probability and Statistics*)

(or STAT 410 *Introduction to Statistical Computing and Regression*

or STAT 431 *Mathematical Statistics I*)

ECON 400 *Econometrics*

MATH 101 and 102 *Single Variable Calculus I and II*

MATH 211 *Ordinary Differential Equations and Linear Algebra*

(or MATH 355 *Linear Algebra*
or CAAM 310 *Linear Algebra*)
MATH 212 *Multivariable Calculus*
(or MATH 221 *Honors Calculus III*)

At least 3 courses from the following:

ECON 301 *History of Economic Analysis*
ECON 355 *Money and Banking*
ECON 415 *Human Resources, Wages, and Welfare*
ECON 416 *Economic History of the U.S.: 1700-1945*
ECON 417 *Comparative History of Industrialization*
ECON 420 *International Economics*
ECON 421 *International Finance*
ECON 430 *Comparative Economic Systems*
ECON 435 *Industrial Organization*
ECON 436 *Government Regulation of Business*
ECON 438 and 439 *Economics of the Law I and II*
ECON 440 *Economics of Uncertainty*
ECON 445 *Managerial Economics*
ECON 448 *Corporation Finance*
ECON 450 *World Economic and Social Development*
ECON 451 *Political Economy of Latin America*
ECON 455 *Money and Financial Markets*

ECON 461 *Urban Economics*
ECON 480 *Environmental and Energy Economics*
ECON 483 *Public Finance*
ECON 485 and 486 *Contemporary Economics Issues*

At least 1 course from the following (or an approved equivalent):

ECON 440 *Economics of Uncertainty*
ECON 471 *Linear Programming*
ECON 472 *Introduction to Game Theory*
ECON 475 *Integer and Combinatorial Optimization*
ECON 476 *Operations Research—Stochastic Models*
ECON 477 *Mathematical Structure of Economic Theory*
ECON 478 *Economic Applications of Mathematical Programming*
CAAM 451 *Numerical Linear Algebra*
CAAM 460 *Optimization Theory*
CAAM 472 *Game Theory and Decision Analysis*

At least 1 approved research course from the following:

ECON 403-404 *Senior Independent Research*
ECON 495-496 *Senior Seminar*
An approved graduate course

Degree Requirements for Ph.D. in Economics

Preparation for Ph.D. Program. Applicants to the Ph.D. program should have had at least two semesters in calculus and one in linear algebra. Students who have not met these requirements may complete these prerequisites as Class III students (pages 90-92) before being admitted to the graduate program. All applicants are required to take the Graduate Record Exam.

Requirements. For general university requirements, see Graduate Degrees (pages 72-76). Candidates for the Ph.D. degree usually spend from two to two and a half years in full-time course work and at least one year writing the dissertation; four to five years is a reasonable goal for completing the program. For the Ph.D., students must:

- Complete an approved program of at least 18 courses, including ECON 593-594 *Workshop in Macroeconomics/Microeconomics/Econometrics* and ECON 595-596 *Workshop in Economics I and II*
- Perform satisfactorily on written general examinations in economic theory
- Demonstrate proficiency in a major field by taking the relevant courses in that field and performing satisfactorily on a written examination
- Complete and defend orally a doctoral dissertation setting forth in publishable form the results of original research

See ECON (pages 290-296) in the Courses of Instruction section.

Education

The School of Humanities

Chair

Raymond O. Wells, Jr.

Professors

Ronald L. Sass

Dennis L. Shirley

Associate Professors

Joe Dan Austin

Linda M. McNeil

Assistant Professor

Elnora Harcombe

Clinical Professor

Anne Papakonstantinou

Lecturers

Lissa Heckelman

Roland B. Smith, Jr.

Degrees Offered: Secondary Teaching Certificate in conjunction with B.A. in major field, M.A.T.

Students in the teacher education program show a commitment to teaching, a record of scholarship in their subject areas, and promise as thoughtful, engaging teachers. Graduates emerge from the program knowledgeable in their particular fields and fully prepared for the teaching profession, trained in children's learning, schools and school policy, and a diversity of teaching styles and methods. The Rice program emphasizes a sound liberal or general education; an extensive knowledge of the subject(s) or area(s) to be taught; professional knowledge, including the relevant historical, philosophical, social, and psychological bases of education; and skills in classroom teaching, which include working with both children and adults and supervising the learning process.

Rice offers three teacher education plans: a secondary teaching certificate in combination with the undergraduate degree in the elected subject field(s), a Master of Arts in Teaching (M.A.T.), and a postbaccalaureate plan for Class III students (pages 90-92) that involves taking only those courses and state examinations needed for certification but does not confer a degree. All three plans include intensive study in the teaching field, courses in professional preparation, teaching in the Rice Summer School for Middle and High School Students, and (for postbaccalaureate students in the M.A.T. plan) a paid internship in an accredited secondary school. While maintaining their institutional integrity, the Rice programs comply with state of Texas certification requirements. Students seeking additional information about the teacher education program may wish to acquire a Teacher Education Program Handbook from the department. They are also encouraged to meet with Education Department faculty.

Requirements for Secondary Teaching Certificate with B.A.

Admission. Students may apply to the Rice University Education Department for admission to the teacher education program if they show:

- Attainment of junior standing at Rice by the semester of admission to the program
- Grades of C- or better in all semester hours attempted in their teaching field(s)
- Evidence of adequate physical vigor to perform as a teacher in a classroom
- A completed Teacher Certification Program form approved by department representatives and the Teacher Education Council before registration for the junior year
- Satisfactory scores on all preprofessional skills tests

Texas Teaching Credential. Rice is approved by the state of Texas to offer teacher preparation programs in the following fields: art, biology, chemistry, computer science, earth science, economics, English, French, general science, geology/earth science, German, health sciences, history, Latin, life sciences, mathematical sciences, physical education, physical science, physics, political science, psychology, Russian, social studies, sociology, and Spanish.

After satisfactory completion of the Rice program, which includes the state-mandated ExCET examinations, students are recommended for a Texas teaching credential. The Texas Education Agency then awards a Texas Provisional Teaching Certificate (Grades 6-12).

Program Requirements. Students should check with the education faculty for detailed program requirements. All courses in their field(s) of specialization (see specific plans below) must have the approval of members of the Rice Teacher Education Council. To complete the teacher education program while earning their bachelor's degree, students must:

- Pass the state's Texas Academic Skills Program (TASP) exam and appropriate ExCET exams
- Acquire a broad base of liberal arts courses while fulfilling university distribution requirements (see pages 19-20)
- Satisfy a state requirement for computer literacy
- Ensure they have met all program requirements specified for undergraduates, M.A.T. candidates, or nondegree (Class III) candidates
- Select one of the following plans and complete the required semester hours:
 - Plan I (one field): at least 36 approved hours in subject field with at least 12 hours of upper-level work
 - Plan II (two fields or at least one for M.A.T.s): at least 24 approved hours in *each* field with 12 semester hours of upper-level work in *each* field
 - Plan IV (related fields): at least 48 approved hours in composite field (general science or social studies) with at least 18 hours of upper-level work
- Complete 18 hours in professional education courses as follows:
 - EDUC 311 *Historical and Philosophical Foundations*
 - EDUC 312 *Psychology of Human Learning*
 - EDUC 409 *Fundamentals of Secondary Education*
 - 3 hours in the appropriate seminar in teaching
 - 6 hours in student teaching (see below)
- Make grades of C- or better in all teaching field courses and education courses

Student Teaching, Apprenticeship and Internship plans are available. Unpaid *Apprenticeships* are for undergraduates who wish to complete the teacher education program in four years and two six-week summer sessions. Candidates enroll for the summer sessions following their junior and senior years. Apprentices assist and teach under the supervision of an experienced master teacher and university faculty in the Rice Summer School for Middle and High School Students.

Internships are undertaken by Master of Arts in Teaching candidates and by undergraduates who begin earning certification in their senior years. Under this plan, students teach one summer session in the Rice University Summer School for Middle and High School Students as described previously and then are supervised through their first semester of a full-time, paid teaching practicum in a neighboring, cooperating school system. Permission to do the field-based practicum is contingent upon a successful summer school teaching experience.

Apprenticeship Plan (Plan A)**Junior Year**EDUC 311 *Historical and Philosophical Foundations*EDUC 312 *Psychology of Human Learning*

Relevant seminar in teaching

Student teaching in Rice Summer School

Senior YearEDUC 409 *Fundamentals of Secondary Education*

400-level seminar in teaching

Student teaching in Rice Summer School
(after graduation)**Internship Plan (Plan B)****Before Graduation**EDUC 311 *Historical and Philosophical Foundations*EDUC 312 *Psychology of Human Learning*EDUC 409 *Fundamentals of Secondary Education*

Appropriate seminar in teaching

After Graduation

Student teaching in Rice Summer School

Student teaching during the fall in
secondary school

Seminar accompanying the internship

Degree Requirements for M.A.T.

Admission. Applicants must have a bachelor's degree, scholarly ability, and an interest in teaching, and they must have taken the Graduate Record Examination (GRE) aptitude test. Department faculty review each application. See Admission to Graduate Study (page 77).

Requirements. For general university requirements, see Graduate Degrees (pages 72-76). This is a professional degree program for students who want to qualify for secondary school teaching following a liberal arts education. Most candidates entering the program have had no professional education courses. By completing the program, candidates usually fulfill all requirements for a Texas Provisional Teaching Certificate. A limited number of tuition waivers are available. To earn the professional M.A.T. degree, students must complete, with grades of B- or higher, at least 33 semester hours (the need to remove deficiencies may require additional courses for certification). Requirements are as follows:

- Courses in secondary school educational theory, teaching strategies, educational practice, and evaluation
- Graduate or upper-level courses in the relevant teaching field(s)
- Supervised full-time teaching for one summer in the Rice Summer School for Middle and High School Students, including design and implementation of courses, teaching, and evaluation
- Supervised teaching internship for one semester in a cooperating secondary school, including the accompanying seminar

During the internship semester, students are not normally eligible for Rice graduate fellowships or scholarship support since the cooperating school districts pay a salary for internship teaching.

Requirements for Class III Certification

A nondegree (Class III) plan for teacher certification is available to those who hold a B.A. but do not choose to pursue a graduate degree. Interested students should direct their queries to the Office of Graduate Studies, which approves the applicant for admission to Rice. The Department of Education then reviews the application and rules on admission to the teacher education program.

See EDUC (pages 297-300) in the Courses of Instruction section.

Electrical and Computer Engineering

The George R. Brown School of Engineering

Chair

J. Robert Jump

Professors

Behnaam Aazhang
 Athanasios C. Antoulas
 David H. Auston
 C. Sidney Burrus
 John W. Clark, Jr.
 Don Herrick Johnson
 James Boyd Pearson, Jr.
 Thomas Avelyn Rabson
 Frank K. Tittel
 William L. Wilson, Jr.
 James F. Young

Associate Professors

Richard G. Baraniuk
 John K. Bennett
 Joseph R. Cavallaro
 Naomi J. Halas
 James B. Sinclair
 Peter J. Varman
 Ian D. Walker

Assistant Professors

Sarita V. Adve
 Edward W. Knightly

Faculty Fellows

Daniel Mittleman
 Alexander A. Oraevsky

Adjunct Professors

Akbil Bidani
 John H. Byrne
 Wayne Rodney Giles
 Thomas Harman
 Steven Jacques
 Gerd Marowsky

Lecturers

Hardy M. Bourland
 Joel H. Cyprus
 Richard P. Massey
 Michael C. Smayling
 James D. Wise

Degrees Offered: B.S., B.A., M.E.E., M.S., Ph.D.

Graduate and undergraduate programs in electrical and computer engineering offer concentrations in areas that include system and control theory, bioengineering, robotics, communications, quantum electronics and lasers, computer systems engineering, and electronic materials, devices, and circuits. Bioengineering is primarily a graduate program, although undergraduates may take introductory courses in this field as electives or as part of their specialization area courses.

Undergraduate Program. The department offers two undergraduate degrees, the Bachelor of Arts (B.A.) and the Bachelor of Science in Electrical Engineering (B.S.E.E.). The B.A. program requires 120 semester hours and is highly flexible, permitting a student to tailor the program to his or her interests, be they very broad or highly focused. The B.S.E.E. degree is approved by the Accreditation Board for Engineering and Technology (ABET) and requires more scientific and professional courses, a total of 134 semester hours, and has fewer electives. Outstanding students interested in careers in research and teaching may enter graduate school after either bachelor degree. Both degrees are organized around a core of required courses and a selection of elective

courses from five specialization areas. Each student's program must contain a depth sequence in one area and courses from at least two areas to provide breadth. The specialization electives provide a flexibility that can be used to create a focus, such as optical communications or robotics, that crosses traditional areas. Because of the number of options, students should consult early with departmental advisers to plan a program that meets their needs.

The B.A. degree provides a basic foundation in electrical and computer engineering that the student can build upon to construct a custom program. Because of its flexibility and large number of free electives, the B.A. can be combined easily with another major to create an interdisciplinary program. This may be particularly appropriate for students planning further study in law, business, or medicine.

The B.S.E.E. is the usual degree taken by those students planning a career of engineering practice. It is accredited by ABET and thus can reduce the time required to become a registered professional engineer. Accreditation and professional registration are important for some careers, and several states require registration for those providing engineering services directly to the public, for example, as a consultant. The program for the B.S.E.E. degree requires greater depth in one area than the B.A. degree but still provides considerable flexibility. Students who place out of required courses but who do not have credit must substitute other approved courses *in the same area* to maintain ABET accreditation.

Degree Requirements for B.S. in Electrical and Computer Engineering

For general university requirements, see Graduation Requirements (pages 17-18). Students completing the B.S. program must have a total of at least 134 semester hours in order to graduate.

Preparation. Students considering a major in electrical and computer engineering should take as freshmen PHYS 101 *Mechanics*, PHYS 102 *Electricity and Magnetism*, and MATH 101 and 102 *Single Variable Calculus I and II*, with the possible addition of CHEM 101 *General Chemistry*, depending on their area and degree plans. Students usually take the first core course, ELEC 241 *Electrical Circuits*, as sophomores, along with more math and science (see below). Students entering with advanced placement have more scheduling options and should consult with one of the department's undergraduate advisers.

Concentration Areas. Students in the B.S. program will choose courses from two or more specialization areas. The systems area involves the study of processing and communicating signals and information through systems of devices, circuits, control and robotics, signal and image processing, and communications. The computer engineering area provides a broad background in computer systems engineering, including computer architecture, hardware engineering, software engineering, and computer systems performance analysis. The physical electronics area encompasses studies of electronic materials, semiconductor and optoelectronic devices, lasers, and photonics. Students must take at least 7 specialization courses, including at least 4 courses in one area and courses from at least two different areas. Because of the number of options, students should consult early with department advisers to plan a program that meets their needs. Students going on to a technical career or graduate school may need to use additional units to create a coherent program.

Required Course Work. In addition to university distribution courses and the freshman/sophomore courses identified above, students pursuing the B.S. degree must take the following courses, completing courses in only *one* concentration area or track:

Core Courses

MATH 211 *Ordinary Differential Equations and Linear Algebra*
 MATH 212 *Multivariable Calculus*
 STAT 310 *Probability and Statistics*
 STAT 381 *Applied Probability*
 One additional 4-hour MATH or basic science course
 ELEC 241 *Electrical Circuits*
 ELEC 301 *Introduction to Signals and COMP 212 Intermediate Programming*
 ELEC 305 *Introduction to Physical Electronics*
 ELEC 320 *Introduction to Computer Organization*
 ELEC 326 *Digital Logic Design*
 ELEC 342 *Electronic Circuits*

Bioengineering

ELEC 481 and 482 *Physiology and Biophysics I and II*
 ELEC 483 *Introduction of Biomedical Instrumentation*
 ELEC 484 *Lasers and Laser-Tissue Interactions*

Computer Engineering

COMP 212* *Intermediate Programming*
 ELEC 421 *Operating Systems and Concurrent Programs*
 ELEC 422 *VLSI Design*
 ELEC 424 *Computer Systems Design*
 ELEC 425 *Computer Systems Architecture*
 ELEC 426 *Digital Systems Design*
 ELEC 428 *Computer Systems Performance*

Systems: Control, Communications, and Signal Processing

ELEC 301* *Introduction to Signals*
 ELEC 302 *Introduction to Systems*
 ELEC 430 *Communication Theory and Systems*
 ELEC 431 *Digital Signal Processing*
 ELEC 436 *Control Systems I*
 ELEC 498 *Introduction to Robotics*

Electronic Circuits and Devices

ELEC 427 *Pulse and Digital Circuits*
 ELEC 435 *Electromechanical Devices and Systems*
 ELEC 442 *Advanced Electronic Circuits*
 ELEC 443 *Power Electronic Circuits*
 ELEC 462 *Semiconductor Devices*
 ELEC 464 *Integrated Circuit Engineering*

Quantum Electronics

ELEC 306 *Electromagnetic Field and Devices*
 ELEC 359 *Quantum Electronics*
 ELEC 461 *Properties of Electronic Materials*
 ELEC 462 *Semiconductor Devices*
 ELEC 463 *Lasers and Photonics*
 ELEC 464 *Integrated Circuit Engineering*
 ELEC 465 *Physical Electronics Practicum*
 ELEC 563 *Introduction to Solid State Physics*
 ELEC 591 *Optics*

* If not counted as a B.S.E.E. core course.

The department may add or delete courses from the areas. In addition, graduate courses and equivalent courses from other departments may be used to satisfy area requirements with permission; consult with departmental advisers for the latest information. A course can satisfy only one program requirement.

Students may choose unrestricted electives to provide the required total of at least 134 units. Those who place out of required courses but who have insufficient semester hours for graduation must substitute other courses in the waived area.

Degree Requirements for B.A. in Electrical and Computer Engineering

For general university requirements, see Graduation Requirements (pages 17-18). Students completing the B.A. program should have a total of at least 120 semester hours at graduation. With its many free electives, the B.A. degree allows students to build on a basic foundation to construct a custom program or to combine the degree with another major to create an interdisciplinary program; the latter may be particularly appropriate

for students planning further study in law, business, or medicine. Combinations with a science major (or equivalent courses) can create a rigorous technical program: e.g., a bioengineering program constructed by adding biology, chemistry, and chemical engineering courses to the B.A. in electrical and computer engineering.

Preparation. Students in the B.A. programs should take the same preparatory courses as students in the B.S. program (see above).

Specialization Areas. The B.A. program comprises a core of required courses and a selection of specialization courses grouped into five areas. Students must take at least 4 specialization courses, including at least 2 courses in one area and courses from at least two different areas. Because of the number of options, students should consult early with department advisers to plan a program that meets their needs. Students going on to a technical career or graduate school may need to use additional units to create a coherent program.

Required Course Work. In addition to university distribution courses and the preparatory freshman/sophomore courses, students pursuing the B.A. degree must take the following courses (using unrestrictive electives to make up the required 120 hours):

Core Courses

MATH 211 *Ordinary Differential Equations and Linear Algebra*
 MATH 212 *Multivariable Calculus*
 (or CAAM 353 *Computational Numerical Analysis*)
 MATH 355 *Linear Algebra*
 (or MATH 381 *Introduction to Partial Differential Equations*
 or CAAM 353 *Computational Numerical Analysis*
 or CAAM 381 *Introduction to Applied Probability*)
 PHYS 201 *Waves and Optics*
 (may be substituted for CHEM 101)
 ELEC 241 *Electrical Circuits*
 ELEC 301 *Introduction to Signals*
 ELEC 305 *Electromagnetic Fields and Waves*
 ELEC 320 *Introduction to Computer Organization*
 ELEC 326 *Digital Logic Design*

Restricted Electives

(one course from each)

Computation

CAAM 210 and 211 *Introduction to Engineering Computation*
 (or COMP 210 *Introduction to Principles of Scientific Computation*)

Laboratory

ELEC 201 *Introduction to Engineering Design*
 ELEC 423 *VLSI Design II*
 ELEC 433 *Communications Systems Lab*
 ELEC 465 *Physical Electronics Lab*
 ELEC 490 *Electrical Engineering Projects*
 (or ELEC 491-492 *Senior Honors Projects*)
 ELEC 496 *Robotics Lab*

Specialization Areas

A 2-course sequence in one area and courses from at least two other areas:

Bioengineering Area

ELEC 481 and 482 *Fundamentals of Systems Physiology and Biophysics I and II*
 ELEC 483 *Introduction to Biomedical Instrumentation and Measurement Techniques*
 ELEC 484 *Fundamentals of Biomedical Photonics*

Computer Engineering AreaELEC 322 *Design/Analysis of Algorithms*ELEC 326 *Digital Logic Design*ELEC 421 *Operating Systems and Concurrent Programs*ELEC 422 *VLSI Design I*ELEC 424 *Computer Systems Design*ELEC 425 *Computer Systems Architecture*ELEC 426 *Digital Systems Design*ELEC 428 *Computer Systems Performance***Control, Communications, and Signal Processing Area**ELEC 301 *Introduction to Signals*ELEC 302 *Introduction to Systems*ELEC 430 *Communication Theory and Systems*ELEC 431 *Digital Signal Processing*ELEC 436 *Control Systems I*ELEC 438 *Remote Sensing*ELEC 498 *Introduction to Robotics***Circuits and Devices Area**ELEC 326 *Digital Logic Design*ELEC 435 *Electromechanical Devices and Systems*ELEC 342 *Electronic Circuits*ELEC 427 *Pulse and Digital Circuits*ELEC 442 *Advanced Electronic Circuits*ELEC 443 *Power Electronic Circuits*ELEC 462 *Semiconductor Devices*ELEC 464 *Integrated Circuit Engineering***Quantum Electronics Area**ELEC 306 *Electromagnetic Fields and Devices*ELEC 359 *Quantum Mechanics*ELEC 461 *Properties of Electronic Materials*ELEC 462 *Semiconductor Devices*ELEC 463 *Lasers and Photonics*ELEC 464 *Integrated Circuit Engineering*ELEC 465 *Physical Electronics Lab*ELEC 563 *Introduction to Solid-State Physics I*ELEC 591 *Optics*

Note: Graduate courses and equivalent courses from other departments may also satisfy area requirements. Because the department may at times add or delete courses, students should consult with department advisers for the latest specialization areas list.

Degree Requirements for M.E.E., M.S., and Ph.D. in Electrical and Computer Engineering

For general university requirements, see Graduate Degrees (pages 72-76). Students should also consult department advisers for specific courses of study.

Master's Degree Programs. A candidate for the professional M.E.E. degree must complete an approved sequence of 10 advanced courses totaling at least 30 hours. Specialization is possible in the general areas of bioengineering, communication and control theory, electro-optics and physical electronics, and computer science and engineering. A candidate for the M.S. degree must complete both an approved course of study and an approved research program, culminating in an acceptable thesis. (The M.S. degree is not a terminal degree but part of the Ph.D. program.)

A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Administration.

Ph.D. Program. Candidates should expect to spend a minimum of three academic years of graduate study in this program. Normally, candidates complete the requirements for an M.S. degree as part of the Ph.D. program. For the Ph.D., students must:

- Obtain high standing in an approved course program
- Perform satisfactorily on qualifying examinations
- Complete a satisfactory dissertation of independent and creative research
- Pass a final oral examination

See ELEC (pages 300-310) in the Courses of Instruction section.

English

The School of Humanities

Chair

Walter Whitfield Isle

Professors

Max I. Apple
Jane Chance
Terrence Arthur Doody
Edward Orth Doughtie
Linda P. Driskill
Alan Grob
J. Dennis Huston
Helena Michie
David Minter
Wesley Abram Morris
Robert L. Patten
William Bowman Piper
Meredith Skura
Edward A. Snow
Susan Wood

Associate Professors

Scott S. Derrick
Colleen R. Lamos
Susan Lurie

Assistant Professors

José F. Aranda, Jr.
Lucille P. Fultz
Betty Joseph

Lecturers

Graciela S. Daichman
Jill "Thad" Logan
Marsha Recknagel
Mary L. Tobin
Katherine Wallingford

Degrees Offered: B.A., M.A., Ph.D.

The undergraduate program offers opportunities for students to improve their writing skills and explore literature while learning to appreciate it critically. The graduate program in English offers concentrations in all fields of British and American literature and literary theory.

Degree Requirements for B.A. in English

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in English must complete 36 semester hours in English with at least 24 hours in courses at the 300 level or above. A double major requires 30 hours in English with at least 18 hours in the upper-level courses. HUMA 101 and 102 may be counted toward the English major. All English majors must take the following:

- ENGL 210 *Major British Writers: Chaucer to 1800*
- ENGL 211 *Major British Writers: 1800 to Present*
- ENGL 260 *Introduction to the Study of American Literature*
- 3 hours in upper-level courses in each of the following: (1) English literature before 1800, (2) English literature after 1800, and (3) American literature

The department recommends that all English majors take courses in English and American history and, if they plan to do graduate work, at least 6 hours of upper-level courses in a foreign language.

Degree Requirements for M.A. and Ph.D. in English

For general university requirements, see Graduate Degrees (pages 72-76). As a part of their training, graduate students participate in the research and teaching activities of the department. The eight distribution fields in both programs are medieval literature, Renaissance literature to 1600 (including Shakespeare), 17th- or 18th-century British literature, 19th-century British literature, 20th-century British literature, American literature to 1900, 20th-century American literature, and literary theory.

M.A. Program. The English Department does not have a formal M.A. program but offers the M.A. degree to those Ph.D. students who have gained official admission to candidacy and are in the process of completing their doctorate and to those Ph.D. students who decide to leave the program before completing their doctorate. Students admitted to the Ph.D. program who want to earn the M.A. degree must:

- Satisfactorily complete at least 3 semester hours at the junior or senior level in the literature of a foreign language, not in translation, either at Rice or at another accredited institution (if they have not done so already)
- Satisfactorily complete at least 24 hours of graduate work in English, exclusive of the thesis
- Satisfy distribution requirements by taking at least 1 course in five of the fields
- Complete a thesis of approximately 50 pages and defend it in an oral examination (for students already admitted to candidacy for the Ph.D. degree, the requirement of a thesis is waived)

Ph.D. Program. To gain official admission to candidacy, Ph.D. students must satisfy the following requirements *up to* completion of the dissertation, and they must receive approval for their dissertation prospectus from the department's Graduate Studies Committee. To earn a Ph.D. degree in English, candidates must:

- Satisfactorily complete at least 6 semester hours at the junior or senior level in the literature of a foreign language, not in translation, either at Rice or another accredited institution (if they have not done so already)
- Satisfactorily complete at least 48 hours of course work in English, exclusive of the thesis, including a 3-hour pedagogy course
- Satisfy distribution requirements by taking at least 1 course in each field
- Pass a 6-hour written preliminary examination focusing on one of the following (in special cases the exam may be interdisciplinary in focus):
 - (1) One of seven traditional literary periods (medieval, Renaissance, British literature 1660-1880, 19th-century British literature, 20th-century British literature, American literature to 1900, or 20th-century American literature)
 - (2) A theoretical tradition or topic
 - (3) A combination of a traditional literary period (or portion of a period) and a theoretical topic or topics (or a genre)
- Complete a dissertation that demonstrates a capacity for independent work of high quality in traditional scholarship, critical interpretation, or critical theory
- Pass an oral examination on the thesis and related fields of study

Financial Support. Within the limits of available funds, qualified students may receive graduate scholarships or fellowships. To qualify for continuing financial aid, students must be approved for candidacy for the Ph.D. by the beginning of their seventh semester at Rice (fifth semester for those entering with an M.A.).

See ENGL (pages 310-316) in the Courses of Instruction section.

Environmental Science and Engineering

The George R. Brown School of Engineering

Chair

Philip Bedient

Professors

Arthur A. Few, Jr.

Mason B. Tomson

Calvin H. Ward

Mark R. Wiesner

Assistant Professor

Joseph B. Hughes

Faculty Fellow

Hanadi S. Rifai

Adjunct Professor

Jean-Yves Bottero

John T. Wilson

Adjunct Associate Professor

Stanley Pier

Adjunct Assistant Professor

Charles J. Newell

Lecturer

James B. Blackburn

Degrees Offered: B.A., M.E.E., M.E.S., M.S., Ph.D.

This interdisciplinary undergraduate major, offered in joint programs with such majors as civil or chemical engineering, gives students academic training in solving technical environmental problems. The department provides an introduction to environmental engineering in topics that include hydrology, water and wastewater treatment, water quality modeling, environmental microbiology, and water chemistry. Graduate programs include both professional degrees and research degrees. A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Administration.

Degree Requirements for B.A. in Environmental Engineering Sciences (as a double major)

The Department of Environmental Science and Engineering offers a dependent double major (B.A.) in environmental engineering sciences. The double major is designed to accommodate undergraduates who wish to obtain a solid preparation for later graduate study in environmental engineering or to pursue careers as environmental professionals (e.g., environmental scientists or environmental economists), or students pursuing nonenvironmental careers (e.g., historians, lawyers, chemical engineers) who will nonetheless benefit from a knowledge of the environmental dimensions of problems and issues they will confront. The 68-semester-hour double major in environmental engineering sciences may be taken in conjunction with any stand-alone major offered in any school of the university. Students wishing to obtain an ABET-accredited degree in engineering should pursue the double major in environmental engineering sciences in conjunction with one of the environmental options offered through the Departments of Civil or Chemical Engineering. The double major includes:

- Foundation course work in mathematics, physics, chemistry, and biology

- A set of 5 undergraduate core courses offered within the Department of Environmental Science and Engineering, required by all double majors, that acquaints undergraduates with a range of environmental problems encountered by engineers, scientists, managers, and policy makers. Core courses cover the breadth of water, soil, and air media within the context of engineering technologies and approaches to problem solving and stress quantitative analytical tools used to address environmental problems
- 24 semester hours of electives from three categories: a) social sciences, humanities, business, architecture; b) natural sciences; and c) engineering. Students may petition to have electives, in addition to those currently listed, apply toward the double major

Specific Course Requirements for a Double Major (B.A.) in Environmental Engineering Sciences include:

MATH 101 and 102 <i>Single Variable Calculus I and II</i>	ENVI 401 <i>Introduction to Environmental Chemistry</i>
MATH 211 <i>Ordinary Differential Equations and Linear Algebra</i>	ENVI 403 <i>Principles of Environmental Engineering</i>
PHYS 101, 125, or 111 <i>Mechanics</i>	ENVI 411 <i>Air Pollution and Solid Waste Management</i>
PHYS 102, 126, or 112 <i>Electricity and Magnetism</i>	ENVI 412 <i>Hydrology and Watershed Analysis</i>
BIOS 201 or 202 <i>Introductory Biology</i>	ENVI 434 <i>Chemical Transport and Fate in the Environment</i>
CHEM 101 and 102 <i>General Chemistry</i>	
CHEM 105 <i>Introductory Lab in Quantitative Chemistry</i>	

24 semester hours of electives are required, with at least 6 semester hours from each category and no more than 9 semester hours applied from any one department. Specific list of elective courses is available in the department office.

Students must also satisfy general university requirements such as distribution requirements and physical education. Students may petition the faculty of Environmental Science and Engineering to add additional courses to the list of approved electives.

Sample Curriculum Leading to Degree of Bachelor of Arts in Environmental Engineering Sciences (as a double major)

Freshman Year

Fall

MATH 101 *Single Variable Calculus I*
 PHYS 101 *Mechanics*
 CHEM 101 *General Chemistry*
 Electives
 Health and Phys. Ed 101

Spring

MATH 102 *Single Variable Calculus II*
 PHYS 102 *Electricity and Magnetism*
 CHEM 102 *General Chemistry*
 CHEM 105* *Introductory Lab in Quantitative Chemistry*
 Electives
 Health and Phys. Ed 102

Sophomore Year

Fall

MATH 211 *Ord. Differential Equations*
 BIOS 201 *Introductory Biology*
 Environmental Elective*
 Environmental Elective

Spring

Environmental Elective
 Environmental Elective

* ENVI 201 *Introduction to Environmental Systems* recommended as environmental elective.

Junior Year*Fall*ENVI 401 *Introduction to Environmental Chemistry*

Environmental Elective

*Spring*ENVI 412 *Hydrology and Watershed Analysis*

Environmental Elective

Senior Year*Fall*ENVI 403 *Principles of Environmental Engineering*ENVI 434 *Chemical Transport and Fate in the Environment*

Environmental Elective

*Spring*ENVI 411 *Air Pollution and Solid Waste Management*

Environmental Elective

24 semester hours of environmental electives are required, with at least 6 semester hours of course work from each of three categories and no more than 9 semester hours applied from any one department. Consult Department of Environmental Science and Engineering for list of approved electives.

Degree Requirements for M.E.E., M.E.S., M.S., and Ph.D. in Environmental Science and Engineering

Applicants for graduate study in environmental science and engineering should have at least a 3.00 (B) grade point average in undergraduate work and high Graduate Record Examination (GRE) scores. For general university requirements, see Graduate Degrees (pages 72-76) and Admission to Graduate Study (page 77).

M.E.E. Program. The Master of Environmental Engineering (M.E.E.) is a professional nonthesis degree requiring one year of study. Students who have a B.S. degree in any field of engineering may apply. Areas of study include hydrology and water resources engineering, water and wastewater treatment design and operation, and numerical modeling. Although the program is open to all qualified applicants, candidates usually are completing undergraduate programs in environmental engineering and wish to extend their education into a fifth year of specialized study.

M.E.S. Program. The Master of Environmental Science (M.E.S.) is a professional nonthesis degree requiring one year of study. To enter the M.E.S. program, applicants must have a B.A. or B.S. degree in any of the natural or physical sciences. Areas of study include environmental biology, environmental chemistry and toxicology, surface and groundwater hydrology, water and wastewater treatment, environmental geology, and environmental planning. Although the program is open to all qualified applicants, candidates typically are completing undergraduate programs in environmental science and wish to extend their education into a fifth year of specialized study.

M.S. Program. Most graduate students in environmental science and engineering pursue a thesis program culminating in the M.S. degree. Candidates must:

- Complete at least 8 approved courses, including 1 course each in environmental chemistry, water and wastewater treatment, hydrology, and environmental modeling (comparable course work completed previously may be substituted for the core courses)
- Select a thesis committee according to department requirements and conduct original research in consultation with the committee
- Present and defend in oral examination an approved research thesis

Students take the oral exam only after the committee determines the thesis to be in an acceptable written format for public defense. Normally, students take two academic years and the intervening summer to complete the degree.

Ph.D. Program. To earn a Ph.D. degree in environmental engineering sciences, candidates must successfully accomplish the following (spending at least four semesters in full-time study at Rice):

- Complete 90 semester hours of approved course work with high standing
- Pass a preliminary written examination on the field of environmental engineering sciences
- Pass a qualifying examination on course work, proposed research, and related topics
- Complete a dissertation indicating an ability to do original research
- Pass a formal public oral examination on the thesis and related topics

Ph.D. candidates typically take the preliminary exam, administered by department faculty, after one to two semesters of course work. Candidates who pass this exam then form a doctoral committee according to department requirements. The qualifying examination administered by the doctoral committee after candidates develop a research proposal evaluates their preparation for the proposed research and identifies any areas requiring additional course work or study.

See ENVI (pages 317-319) in the Courses of Instruction section.

French Studies

The School of Humanities

Chair

Bernard Aresu

Professors

Madeleine Alcover

Jean-Joseph Goux

Deborah Hubbard Nelson

Associate Professors

Deborah A. Harter

Daniel J. Sherman

Philip R. Wood

Assistant Professor

Michel Achard

Lecturers

Anna B. Caflisch

Evelyne Datta

Degrees Offered: B.A., M.A., Ph.D.

Courses in this department hone language skills in French while placing a diverse, generalized knowledge of French literature within a broad spectrum of cultural, historical, philosophical, and theoretical concerns. Students are also urged to take courses in fields closely related to French studies, including European and English history, literature, and philosophy. The department encourages students to spend time studying in a francophone country and to that end offers, as staffing permits, a six-week summer travel/study program in Dijon, France. Courses in Italian language and culture are included within this department.

Degree Requirements for B.A. in French Studies

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in French studies must complete at least 30 semester hours in upper-level courses (at the 300 or 400 level). A double major or an area major must complete 24 hours in upper-level courses.

Students who matriculated at Rice University before August 1997 are required to take FREN 304, either 311 or 312, and either 371 or 372 unless exempted by his or her major advisor. These students also have the option of choosing to fulfill the new requirements below. Students who matriculate August 1997 or later must fulfill the following requirements:

Required Courses

FREN 301 *Advanced French Grammar*

FREN 311 *Introduction to French Literature I*

(or FREN 312 *Introduction to French Literature II*)

FREN 371 *Old Regime and Revolutionary France*

(or FREN 372 *The Making of Modern France, 1815-1995*)

Electives

7 additional courses (for single majors),
at least 3 courses at the 400 level and
at least 1 course from Group III
(culture, history, and civilization)

5 additional courses (for double majors),
at least 2 courses at the 400 level and
at least 1 course from Group III
(culture, history, and civilization)

In choosing their additional courses, majors must take at least one course each from the period before 1800 and the one after 1800, selected from the following:

Period before 1800

FREN 311 *Introduction to French*

Literature I

FREN 351 *The Provinces of France*

FREN 371 *Old Regime and Revolutionary France*

FREN 410 *The Literary and Historical Image of the Medieval Woman*

FREN 415 *Courtly Love in Medieval France*

FREN 430 *French Classicism*

FREN 440 *French Enlightenment*

FREN 445 *Enlightenment and Counter-Enlightenment*

Period after 1800

FREN 312 *Introduction to French*

Literature II

FREN 321 *Paris*

FREN 360 *Society and the Sexes in Modern France*

FREN 372 *The Making of Modern France, 1815-1995*

FREN 387 *Images of Contemporary France*

Plus other courses at the 400 level

As many as 2 French courses taught in English may count toward a major in French studies. Students who have taken 300- and 400-level French courses (except those taught in English) cannot enroll simultaneously or afterward in 200-level French courses for credit. At least half of the courses for the major must be taken at Rice University. The department normally requires that the basic courses for the major (FREN 301, 311 or 312, 371 or 372) be taken at Rice.

Students with diplomas from French-speaking institutions must consult with the department before enrolling in courses, and all majors and prospective majors must have their programs of study approved by an undergraduate adviser. Students wishing to complete the honors program in French studies should also consult one of the advisers.

Campus Activities. To acquaint students with French language and culture, the department sponsors a weekly French Table that meets at lunch in Baker College. The Club Chouette also organizes outings to French movies, sponsors guest lectures, and, in cooperation with the department, helps to produce a play during the spring semester. Students who maintain at least a B average in two or more advanced French courses are invited to join the Theta chapter of the honorary Pi Delta Phi.

Travel Abroad. The department encourages majors to spend time living and studying in a francophone country. The Alliance Française of Houston offers a summer scholarship of \$2,300 each year to a qualified sophomore or junior for six weeks' study in France. The Clyde Ferguson Bull Traveling Fellowship, awarded each year to at least one graduating senior with a major or double major in French studies, permits the recipient to spend an entire year in France. Information about study abroad is available from the department faculty and in the Office of Academic Advising.

Degree Requirements for M.A. and Ph.D. in French Studies

Admission to graduate study in French, granted each year to a limited number of qualified students, requires a distinguished undergraduate record in the study of French literature and a capacity for independent work. All candidates should have a near-native command of the French language. For general university requirements, see Graduate Degrees (pages 72-76).

M.A. Program. In most cases students take two years to complete work for the M.A. degree in French studies. While graduate students normally take 500-level courses, as many as 2 courses at the 400 level may count toward fulfillment of the following course requirements. M.A. candidates must :

- Complete with satisfactory standing 24 semester hours (in addition to B.A. course work) of upper-level courses, plus 6 hours of thesis work
- Perform satisfactorily on a reading examination in one department-approved language other than French
- Perform satisfactorily on preliminary written and oral examinations conducted in French on works specified on the department reading list
- Complete a thesis on a subject approved by their graduate committee
- Successfully defend the thesis in a final oral examination

Ph.D. Program. Candidates normally take 500-level courses, but students entering with a B.A. may count toward their Ph.D. degree as many as 3 courses at the 400 level that *also* have a 500-level listing; those entering with an M.A. may count 2 such courses. Graduate student enrollment in a course listed only at the 400 level, however, is subject to the instructor's approval. Candidates for the Ph.D. degree must accomplish the following, being sure to complete the additional language requirement and their preliminary exams one year before they submit a dissertation:

- In a program approved by the department complete with high standing at least 54 semester hours of course work plus 36 thesis hours (for those already holding an M.A. degree, the requirement is 27 hours of course work plus 36 thesis hours)
- In addition, complete FREN 610 *Topics in Language Methodology*, a course required for all graduate language teaching assistants
- Satisfactorily complete 1 course at the 300 level or above in a language other than French or English, chosen in consultation with a graduate adviser for its relevance to their research interests. With the permission of the graduate committee, this requirement may also be met through satisfactory performance on a written language examination
- Perform satisfactorily on preliminary written and oral examinations (the oral exam taken only after successful completion of the written exam) on a list of required, department-approved texts including: selected readings in French literature from all major periods and readings in crucial texts in philosophy and theory; history, cultural studies, and film; and postcolonial and gender studies
- Complete a dissertation, approved by the department, that represents an original contribution to the field of French studies
- Perform satisfactorily on a final oral examination on the dissertation

Italian Language and Culture

Italian language courses are available, under the auspices of the Department of French Studies, as are courses in Italian literature and culture. The department also sponsors a weekly Italian Table at Baker College. A \$2,000 scholarship sponsored by the Italy in America Association of Houston is awarded annually to an eligible sophomore or junior to support studies in Italian language and culture. When available, the Donne Di Domani Scholarship of \$2,000 for tuition and books is offered to an eligible undergraduate, and the Enrico Caruso Award of up to \$4,500 to study voice in the U.S. or Italy is granted to eligible undergraduate or graduate students majoring in voice.

See FREN (pages 320-329) and ITAL (page 384) in the Courses of Instruction section.

Geology and Geophysics

The Wiess School of Natural Sciences

Chair

John B. Anderson

Professors

Hans G. Avé Lallemant

Richard G. Gordon

Dieter Heymann

William P. Leeman

Alan R. Levander

Dale S. Sawyer

Manik Talwani

Peter R. Vail

Associate Professors

André W. Droxler

James E. Wright

Assistant Professors

Virginia B. Sisson

Basil Tikoff

Colin A. Zelt

Adjunct Professors

K. K. Bissada

Carlos A. Cramez

Jeffrey J. Dravis

De-hua Han

M. Turhan Taner

James L. Wilson

Adjunct Associate Professors

Gianni Matteucci

W. C. Rusty Riese

Adjunct Assistant Professors

Raymond A. Donelick

Andrew L. Kurkjian

Paul D. Spudis

Gabor Tari

Lecturer

Robyn Wright Dunbar

Degrees Offered: B.A., M.A., Ph.D.

The undergraduate program in geology focuses on a strong core of courses in all areas of earth materials, processes, and history as well as in allied sciences. Students also gain experience with analytical equipment and computer systems and in fieldwork. The undergraduate geophysics major combines courses that apply physics to the study of the earth's interior with course work in geology and mathematics. The program emphasizes computer techniques and work in the department's seismic processing center. A double major can lay the foundation for a career in environmental geology, and students may also acquire certification in earth science as a teaching field.

Advanced graduate work is available in marine geology and oceanography, stratigraphy, carbonate and siliciclastic sedimentology, igneous and metamorphic petrology, geochemistry, structural geology, regional tectonics, reflection and crustal seismology, and geodynamics. Ideally, programs of study and research incorporate more than one of these specialties.

Degree Requirements for B.A. in Geology

For general university requirements, see Graduation Requirements (pages 17-18). Students completing the B.A. program should have a total of at least 128 hours at graduation. Students majoring in geology must complete the following:

Geology

GEOL 101 *The Earth*
 (or GEOL 102 *Evolution of the Earth*
 or GEOL 107 *Oceans and Global Change*
 or GEOL 108 *Crises of the Earth*)
 GEOL 105 *Introductory Lab for Geological Sciences*
 GEOL 311 *Mineralogy and Optics*
 GEOL 312 *Petrology*
 GEOL 331 *Structural Geology*
 GEOL 332 *Sedimentology*
 GEOL 334 *Geological and Geophysical Techniques*
 GEOL 390 *Field Geology*
 GEOL 442 *Exploration Geophysics*
 (or GEOL 446 *Solid Earth Geophysics*)

Math and Other Sciences

MATH 101 and 102 *Single Variable Calculus I and II*
 MATH 211 *Ordinary Differential Equations and Linear Algebra*
 CHEM 101-102 *General Chemistry*
 (or CHEM 111-112 *Principles of Chemistry*)
 CHEM 105 *Introductory Lab in Quantitative Chemistry*
 PHYS 101 or 111 *Mechanics*
 PHYS 102 or 112 *Electricity and Magnetism*
 NSCI 230 *Computation in Natural Science*

Required Electives. Majors must also complete at least 12 hours in additional science and engineering courses at the 300 level or higher from an approved list; double majors must complete only 6 hours. Students interested in careers in **environmental geology** are encouraged to take some of the following courses as electives:

GEOL 353 *Environmental Geochemistry*
 GEOL 326/426 *Environmental Geology*
 ENVI 306 *Global Environmental Law and Sustainable Development*
 ENVI 401 *Introduction to Environmental Chemistry*
 ENVI 406 *Introduction to Environmental Law*
 ENVI 412 *Hydrology and Watershed Analysis*

Degree Requirements for B.A. in Geophysics

For general university requirements, see Graduation Requirements (pages 17-18). Students completing the B.A. program should have a total of at least 130 hours at graduation. Students majoring in geophysics must complete the following:

Geology

GEOL 101 *The Earth*
 (or GEOL 102 *Evolution of the Earth*
 or GEOL 107 *Oceans and Global Change*
 or GEOL 108 *Crises of the Earth*)
 GEOL 105 *Introductory Lab for Geological Sciences*
 GEOL 311 *Mineralogy and Optics*
 (or GEOL 332 *Sedimentology*)
 GEOL 331 *Structural Geology*
 GEOL 334 *Geological and Geophysical Techniques*
 GEOL 390 *Field Geology*
 GEOL 441 *Geophysical Data Analysis*
 (or GEOL 461 *Seismology I*)
 GEOL 442 *Exploration Geophysics*

GEOL 444 *Reflection Seismic Data Processing Lab*
 GEOL 446 *Solid Earth Geophysics*
 GEOL 462 *Advanced Solid Earth Geophysics*
 (or GEOL 464 *Fundamentals of Plate Tectonics*)

Math and Other Sciences

MATH 101 and 102 *Single Variable Calculus I and II*
 MATH 211 *Ordinary Differential Equations and Linear Algebra*
 MATH 212 *Multivariable Calculus*
 CHEM 101-102 *General Chemistry*
 (or CHEM 111-112 *Principles of Chemistry*)

CHEM 105 *Introductory Lab in
Quantitative Chemistry*
PHYS 101 or 111 *Mechanics*
PHYS 102 or 112 *Electricity and
Magnetism*

PHYS 201 *Waves and Optics*
PHYS 231 *Elementary Physics Lab II*
NSCI 230 *Computation in Natural
Science*

Required Electives. Majors must also complete at least 3 hours in additional science and engineering courses at the 300 level or higher from an approved list.

Undergraduate Independent Research

The department encourages, but does not require, both geology and geophysics undergraduate majors to pursue independent supervised research in GEOL 481-482 *Senior Research in Geology* or GEOL 491-492 *Special Studies*. See also Honors Programs (page 34).

Degree Requirements for M.A. and Ph.D. in Geology and Geophysics

All incoming students should have a strong background in physics, chemistry, and mathematics and should have, or should acquire, a broad grounding in fundamental earth sciences. The department encourages applications from well-qualified students with degrees in the other sciences and mathematics.

For general university requirements, see Graduate Degrees (pages 72-76). The requirements for the M.A. and Ph.D. in geology and geophysics are similar, but the Ph.D. demands a significantly higher level of knowledge, research skills, and scholarly independence. Most students need at least two years beyond the bachelor's degree to complete the M.A. and at least two years beyond the M.A. degree for the Ph.D.

Candidates determine with their major professor and advisory committee a course of study approved by the department Graduate Committee, following the *Guidelines for Advanced Degrees in the Department of Geology and Geophysics* distributed to all incoming students. For both degrees, candidates must:

- Complete 20 semester hours of course work at the 400 level and above (or other approved courses), not including research hours
- Maintain a grade point average of 3.00 (B) or better
- Prepare a thesis proposal during their second semester (no later than their third)
- Pass an oral qualifying exam based on the proposal before beginning research
- Produce a publishable thesis that represents an original contribution to science
- Defend the research and conclusions of the thesis in an oral examination

Students of exceptional ability with a bachelor's degree and department approval may work directly toward the Ph.D., in which case the course of study is equivalent to that required for both degrees; performance on the examinations and the thesis, however, should be at the level required for the Ph.D.

Because the graduate programs require full-time study and close interaction with faculty and fellow students, the department discourages students from holding full- (or nearly full-) time jobs outside the university.

Financial Assistance. Teaching assistantships and research assistantships (which do not obligate a student to specific research projects) are available for the first year of study, during which students select an adviser and a research project. In the second and subsequent years, students normally receive, from external funds, a stipend and tuition for specific research.

See GEOL (pages 330-335) in the Courses of Instruction section.

German and Slavic Studies

School of Humanities

Chair

Klaus H. M. Weissenberger

Professors

James E. Copeland

Margret Eifler

Maria-Regina Kecht

Ewa M. Thompson

Joseph B. Wilson

Michael Winkler

Assistant Professor

Robert S. Bledsoe

Adjunct Professor

Earl D. Mitchell

Lecturers

Waclaw Mucha

Richard Spuler

Visiting Professors

Krzysztof Koehler

Jan Rybicki

Degrees Offered: B.A., M.A., Ph.D. (B.A. only in Slavic Studies)

The major in German studies offers maximum exposure to interdisciplinary studies in German. Courses situate German culture within the broad context of European history, covering not only the traditional fields of language and literature but also those of gender, film, and cultural theory. The degree work prepares students for careers in such fields as academia, communications, diplomacy, and international law and economics. Also offered are courses in German cultural studies (GMAN), which are taught in English.

In the B.A. degree program in Slavic studies, students acquire a proficiency in Russian and Eastern European language, culture, and literature. A three-year study plan is also available within this department in the Russian language. A variety of Russian literature courses are taught in English, including monograph courses on Tolstoy and Dostoevsky.

Degree Requirements for B.A. in German Studies

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in German studies must complete at least 30 semester hours in upper-level courses (at the 300 or 400 level); a double major must complete 24 hours in upper-level courses. Majors may take two courses related to the subject of German studies outside the department in other fields of study such as art, music, linguistics, history, philosophy, and political science.

The department encourages all majors to meet with faculty and graduates at a weekly German Table for lunch in one of the colleges. Majors are also urged to spend time living and studying in Germany by applying for the Dr. and Mrs. Earl Douglas Mitchell Fellowship, a fund established for study abroad. Information on other programs of study in Germany is available from members of the German studies faculty and from the Office of Academic Advising.

Honors. Outstanding students are presented annually with the Max Freund Prize and the Goethe Institut Book Prize. The department also offers an honors program for majors excelling in their studies (see Honors Programs on page 34). Honors work consists of readings and research leading to a substantial honors essay under the supervision of a department faculty member; students should consider the work as a special interest study to enhance preparation and application for graduate school.

Degree Requirements for M.A. and Ph.D. in German Studies

For general university requirements, see Graduate Degrees (pages 72-76). As part of their training, all graduate students must perform some duties such as teaching or assisting in classes, working in the language lab, assisting in faculty research, and participating in other activities suggested by the department. Study abroad is encouraged and supported by the Dr. and Mrs. Earl Douglas Mitchell Fellowship Fund.

M.A. Program. Candidates for the M.A. degree must:

- Complete with high standing an approved program, usually of 24 semester hours, at the graduate level, plus thesis hours
- Pass a reading examination in a foreign language other than German (or complete a language course at the 202 level approved by the department)
- Complete an acceptable thesis
- Perform satisfactorily on a final oral examination on the thesis and related topics

Ph.D. Program. Candidates for the Ph.D. degree must:

- Complete with high standing an approved program, usually of 45 semester hours at the graduate level, including courses required for the M.A. degree
- Pass a reading examination in a foreign language other than German (or complete a language course at the 300 level approved by the department)
- Perform satisfactorily on a preliminary written and oral examination in the general field of German studies (exam is based in part on a departmental reading list)
- Complete a dissertation, approved by the department, that represents an original contribution to knowledge
- Perform satisfactorily on a final oral examination on the dissertation and topics in related fields

Degree Requirements for B.A. in Slavic Studies

For general university requirements, see Graduation Requirements (pages 17-18). Single majors in Slavic studies must complete 24 semester hours (8 departmental courses) above the 300 level. Double majors must complete 18 hours (6 courses) above the 300 level. At least one of these courses must cover the entire Slavic area (e.g., SLAV/RUSS 320 *Slavic Cultures*, SLAV/RUSS 411 *Contemporary Russia*, or SLAV/RUSS 412 *Contemporary Eastern and Central Europe*).

Courses in Polish are offered subject to availability of an instructor. Students may take two Slavic studies-related courses from outside the department, subject to approval by the Slavic studies adviser.

Fellowships in varying amounts are available for Slavic studies from the Dr. and Mrs. Earl Douglas Mitchell Fellowship Fund.

See GERM (pages 336-342), GMAN (pages 342-343), PLSH (page 428), RUSS (pages 453-455), SLAV (pages 456-457), and SWED (page 475) in the Courses of Instruction section.

Hispanic and Classical Studies

The School of Humanities

Chair

Robert Lane Kauffmann

Professors

James A. Castañeda

Harvey E. Yunis

Associate Professors

J. Bernardo Pérez

Joan Rea

Hector N. Urrutibéheity

Kristine Gilmartin Wallace

Assistant Professor

Hilary S. Mackie

Lecturers

Graciela S. Daichman

Anita Kiperman

Degrees Offered: B.A. and M.A. (B.A. only in Classics)

Studies are available in classics, Greek, Latin, Portuguese, and Spanish. For information on the B.A. degree in classics, see the section on the classics major (page 132). Undergraduate majors in Hispanic studies select one of three options: literature, language and linguistics, or Latin American studies. Qualified upper-class students may also undertake independent work. To provide students with the opportunity to live and study in a Spanish-speaking environment, the department offers the Fall Semester in Chile.

Degree Requirements for B.A. in Hispanic Studies

For general university requirements, see Graduation Requirements (pages 17-18). Requirements for the Hispanic studies major differ according to the option selected. For the B.A., students must complete the following:

Literature option—30 semester hours (10 courses) in Spanish at the 300 level or higher

Language and linguistics option—at least 24 hours (8 courses) in Spanish language and Spanish linguistics at the 300 level or higher; 1 course in linguistics (e.g., LING 200 *Introduction to the Scientific Study of Language*, LING 300 *Linguistic Analysis*, or LING 305 *Historical Linguistics*); and one semester of college Latin

Latin American studies option—at least 24 hours (8 courses) in Spanish at the 300 level or higher, and 6 hours (2 courses) in Portuguese

Students should consult with the department adviser to find out the specific requirements regarding courses and the course sequence to be followed. The department must approve all major programs of study. At least half of the courses for the major must be taken at Rice University.

Fall Semester in Chile. The department offers a Fall Semester in Chile in conjunction with the University of Chile in Santiago. Rice students in good standing are eligible for this program, which gives them access to a variety of courses at the University of Chile. Since its inception in 1989, the program has attracted students from universities all over the U.S. Brochures and application materials are available in the department office.

Degree Requirements for M.A. in Hispanic Studies

For general university requirements, see Graduate Degrees (pages 72-76). For the M.A. degree, candidates must:

- Complete with high standing an approved program that normally includes 24 semester hours in advanced courses, plus 6 hours of thesis work
- Pass a reading examination in one foreign language other than Spanish, which has been approved by the department
- Perform satisfactorily on a written comprehensive examination in Spanish, which tests students' competence in Hispanic literature and linguistics
- Take one semester of college Latin (or equivalent)
- Take SPAN 610 *Topics in Language Methodology*
- Complete an acceptable thesis
- Perform satisfactorily on a final oral examination on the thesis

See PORT (page 437) and SPAN (pages 466-471) in the Courses of Instruction section.

History

The School of Humanities

Chair

Gale Stokes

Professors

John B. Boles
Judith Brown
Ira D. Gruber
Thomas L. Haskell
Allen J. Matusow
Atieno Odhiambo
Patricia Seed
Richard J. Smith
Albert Van Helden
Martin J. Wiener
Richard Wolin

Associate Professors

Edward L. Cox
Talya Fishman
Michael Maas
David Nirenberg
Carol E. Quillen
Paula Sanders
Daniel Sherman
Joel W. Wolfe
John H. Zammito

Assistant Professors

Peter C. Caldwell
Jane Dailey
Ussama Makdisi
Michael Willrich

Degrees Offered: B.A., M.A., Ph.D.

The undergraduate program offers courses in the four main areas of ancient-medieval history, modern European history, U.S. history, and the histories of Asia, Latin America, and Africa. The department encourages its majors to acquaint themselves with other humanistic disciplines, such as literature, fine arts, and philosophy; the contributions of political science, sociology, economics, and anthropology are also vital to historical studies. The graduate program, which trains a limited number of carefully selected students, offers studies in a number of areas, with faculty interests ranging from medieval history to modern British, French, German, and Balkan history, from areas in American history that include Colonial America, the Old and New South, the Civil War, legal/constitutional and intellectual history to world military history, and from the history of science to East Asian, Latin American, and Middle Eastern history.

Degree Requirements for B.A. in History

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in history must complete at least 30 semester hours (10 courses) in history, with 18 hours (6 courses) at the 300 or 400 level. Students may apply advanced placement credit to no more than 6 of these hours (2 courses). Majors should select two (2) of the required upper-level courses from a departmental list of seminars/colloquia

devoted mainly to writing and discussion. Departmental distribution requirements are as follows (students may not use advanced placement credit for these requirements):

Ancient-medieval history—at least 1 course

Modern European history—at least 2 courses

U.S. history—at least 2 courses

Asian, Latin American, and African history—at least 1 course

Some foreign language proficiency is desirable, and the department highly recommends that students who are contemplating graduate work in history study at least one foreign language in some depth (most graduate schools require a reading knowledge of French and German for the Ph.D. degree).

Transfer Credit and Advanced Placement Credit. The Department of History grants transfer credit on a case-by-case basis to enrolled undergraduates if the course taken elsewhere is at an intellectual standard not markedly inferior to that of a comparable course taken at Rice (the registrar determines the hours to be credited). However, history majors must take *at least 18 semester hours* (6 courses) of the required 30 hours in history at Rice. No more than 4 courses may be satisfied through advanced placement and transfer credit. Advanced placement credit may not be used to satisfy departmental distribution requirements for a history major.

Rice students who wish to take classes for credit at another U.S. university should allow sufficient time to get advance confirmation from the department that the course is eligible: courses are eligible only if taken at a four-year institution and if a substantially similar course is not offered at Rice. Summer school classes usually fall below the required standard. Rice students planning to study at a foreign university must get course approval from the Office of International Education; although the same intellectual standard applies, course content may differ from the usual Rice course.

After completing an approved course from either a domestic or a foreign university, students should submit a request for transfer credit, including evidence of the scope and work requirements of the course to be transferred (e.g., a syllabus, reading lists, and copies of exams and papers), to the department's director of undergraduate studies.

Honors Program. Qualified undergraduates may enroll for 6 semester hours of directed honors research and writing, completing an honors thesis in their senior year (these 6 hours are *in addition to* the 30 hours required for the major). Students must complete both semesters of HIST 403-404 to receive credit; the grade for the final project applies to the full 6 hours. Interested students who have a grade point average of at least 3.50 in their history courses and who have completed at least one seminar by the middle of their junior year should submit a honors thesis proposal along with recommendations from the seminar instructor and their proposed adviser. After their admission to the program, a periodic workshop allows honors students to share problems and ideas. Once the adviser and another reader have evaluated the completed thesis, the director of the honors program determines whether to award honors. Students who miss the final thesis deadline (which is well before the end of their senior year) will receive a grade and credit for completed work, but no honors.

Degree Requirements for M.A. and Ph.D. in History

Students who have a B.A. degree (or its equivalent) from an acceptable institution are eligible to apply to the graduate program in history. The M.A. and Ph.D. degrees are offered in limited areas of American, European, and other history. Further information

is available on request from the department. For general university requirements, see Graduate Degrees (pages 72-76).

The department awards graduate tuition waivers and fellowship stipends, within the limits of available funds, to qualified students with demonstrated ability. As a part of their training, graduate students are expected to provide limited services to the university as tutorial instructors, research assistants, or editorial assistants for the *Journal of Southern History* or *The Papers of Jefferson Davis*, both sponsored by the university.

M.A. Program. Completion of the M.A. degree usually takes two years; no more than three years may elapse between graduate admission and the completion of the degree unless the department Graduate Committee approves an extension. An M.A. degree is also available to doctoral students who fulfill special requirements set by the department. For the M.A. degree, candidates must:

- Complete at least 24 semester hours of formal class or seminar work
- Take one graduate seminar
- Write a thesis under the direction of an advisory committee of the department headed by a professor having special competence in the thesis subject area
- Successfully defend the thesis in an oral examination

Ph.D. Program. Doctoral candidates must prepare themselves in three fields of history, two in their major area of concentration, whether European, U.S., or other history, and a third in an area outside of that concentration (e.g., if the major area is European history, the third field must be in U.S. or other non-European history, and if the major area is U.S. history, the third field must be in European or other non-U.S. history, and so on). Students who wish to pursue a third field in an area outside the department should petition the Graduate Committee by the end of their second semester.

Ph.D. students do not need to complete a specific number of semester hours, but they must remain full-time students from their entry into the program until they pass their qualifying examination. Passing the qualifying exam allows the student to apply for formal admission to candidacy for the Ph.D. degree.

For the Ph.D., candidates must:

- Complete enough course work, including directed and independent reading, to prepare them thoroughly in one of their three fields, working with an adviser who has expertise in that field
- Take eight graduate seminars, including methods courses
- Pass reading examinations in the principal language of research (unless it is English) and one other language (not English)
- Perform satisfactorily on oral and written qualifying examinations during students' fifth semester or by the beginning of their sixth semester (those entering with a B.A.) and during their third semester or by the beginning of their fifth semester (those entering with a M.A.)
- Complete a dissertation presenting the results of original research within three years after passing the qualifying examination (unless an extension is granted by the Graduate Committee)
- Defend the thesis in a public oral examination

See HIST (pages 352-377) in the Courses of Instruction section.

Human Performance and Health Sciences

The School of Humanities

Chair

James G. Disch

Professors

Frank W. Bearden
 Nicholas K. Iammarino
 Eva J. Lee
 Hally Beth W. Poindexter
 Dale W. Spence

Adjunct Professors

William J. Bryan
 Herbert L. Fred
 William L. Risser
 Ray H. Skaggs
 Armin D. Weinberg

Associate Professor

Bruce R. Etnyre

Assistant Professor

Albert F. Spencer

Instructors

Felicia Cavallini
 Linda G. Phenix

Lecturers

Cassius B. Bordelon, Jr.
 Allen W. Eggert
 Brian Gibson
 Harmon Gallant
 Maher Hamza
 Christine A. Lidvall
 Kim Pyung-Soo
 Kristy Vandenberg
 Joyce Yost

Degree Offered: B.A.

This major offers concentrations in the five areas of exercise science, sports medicine, sports management, health sciences, and teaching and/or coaching. Teacher certification is available in both physical education and health education.

Degree Requirements for B.A. in Human Performance and Health Sciences

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in human performance and health sciences must:

- Complete at least 40 to 46 semester hours of course work, meeting requirements for one of the five following concentrations: exercise science, sports medicine, sports management, health sciences, or teaching/coaching
- Take HPER 161 *Foundations of Human Performance*
- Take HPER 120 *Scientific Foundations*

Teacher Certification. To qualify for teacher certification by the Texas Education Agency, students must complete 12 hours of English, 6 hours of American history, 6 hours of federal and state government, 18 hours of education, 24 hours in another teaching field, and 24 hours of health education courses or physical education courses depending on which is selected for the teaching field (requirements subject to change).

See HEAL (pages 350-351) and HPER (pages 377-380) in Courses of Instruction.

Linguistics

The School of Humanities

Chair

James E. Copeland

Professors

Philip W. Davis
Sydney M. Lamb
Stephen A. Tyler

Associate Professors

Spike Gildea
Maria-Regina Kecht
Suzanne E. Kemmer
Livia Polanyi
Hector N. Urrutibéheity

Adjunct Professors

Charles F. Hockett
Richard C. Stasney

Adjunct Assistant Professor

J. David Garrett

Assistant Professors

Michel Achard
Michael Barlow
Nanxiu Qian

Lecturer

Timothy Pulju

Lecturers in Asian Languages

Lilly C. H. Chen
Caroline Houngh

Hiroko Sato

Insun Yang

Adjunct Lecturer

Arun Prakash

Degrees Offered: B.A., M.A., Ph.D.

Undergraduate Programs. The department offers both a major program in linguistics, and a Certificate in Teaching English as a Second Language, which may be earned with or without a linguistics major.

Linguistics Major. Because human language is a multifaceted object of study, linguistics is by its nature an interdisciplinary field. The undergraduate major in linguistics provides both an in-depth grounding in the field as well as cross-disciplinary breadth. Students beginning a linguistics major should take LING 200, which is prerequisite for many upper-level courses in the department. All majors are required to take at least 8 courses (24 semester hours) in linguistics at the 300 level or above, including 4 core courses: LING 300, 301, one of LING 402 or 416, and one of LING 305 or 315. No more than one independent study course may be counted toward the major requirement. In addition, competency in one language other than English is required. This requirement may be satisfied by two courses in a foreign language at the 200 level or above or equivalent; or at the 100 level or above for non-European languages.

Students may elect either a general linguistics major or one of four areas of concentration. Majors who plan to pursue graduate training in linguistics are recommended to choose one of the areas of concentration. These students are also urged to apply for admission to the honors program in their junior year.

The general linguistics major requires, in addition to the 4 core courses and the language requirement, at least 4 upper-level linguistics electives. The requirements for the various concentrations include additional courses, as follows:

Language Concentration. In addition to the basic language competency required of all majors, the language concentration requires an advanced level competency in a different language. This can be satisfied by two language courses taught in a language other than English at the 300 level or above, or equivalent. In addition to the core courses, 4 advanced linguistics electives are required, which should be chosen in consultation with the linguistics adviser. Courses in the structure or history of the languages studied are especially appropriate.

Cognitive Science Concentration. In addition to the core courses, this concentration requires 3 courses focused on the cognitive aspects of human language, selected from the following: LING 306, 315, 317, 411, 412; 2 courses from cognitively related disciplines (psychology, computer science, anthropology, philosophy) as approved by the major adviser; and two other advanced linguistics electives.

Language, Culture, and Society Concentration. For an in-depth grounding in a particular language and culture, this concentration requires 2 language courses at the 300 level or above. The language may be the same as that used to satisfy the basic level language competency. Besides the 4 core courses, 2 additional courses from the following must be selected: LING 313, 406, 415, or 422. Finally, 2 courses in socio-cultural studies outside the department are required, and must be approved by the major adviser. Examples of appropriate courses are ANTH 353, PSYC 202, SOCI 353, RELI 393, HIST 250.

Second Language Acquisition Concentration. Two language courses at the 300 level or above are required; the language may be the same as that used to satisfy the basic-level language competency. In addition to the linguistics core courses, 4 additional courses are required as follows: LING 340 and LING 417; LING 394 or a foreign language equivalent (e.g. *Structure of Spanish*, *Structure of German*, etc.) as approved by the major adviser; and one of the following: LING 309, 310, 313, 415, or 490.

In addition to the departmental requirements for the major, students must satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total of at least 120 semester hours. See Degree Requirements and Majors.

Honors Program. The departmental honors program provides selected undergraduate majors with the opportunity to conduct supervised research within their area of specialization in the major. Majors planning to pursue graduate training in linguistics or a related field are strongly encouraged to apply, as well as others who wish to add the experience of an intensive, individualized research project to their undergraduate education.

Application to the honors program should be made in person to the undergraduate adviser in the second semester of a student's junior year. In support of the application, the student should prepare a brief description of the proposed project signed by the faculty member who is to supervise the work. Acceptance into the program is by agreement of the linguistics faculty. On acceptance, the student will enroll in LING 482, *Honors Project*, with the supervising faculty member named as instructor. The honors program framework is designed to facilitate as far as possible the development of a mentoring relationship between student and faculty member. Students are thus expected to consult with the project supervisor periodically regarding their progress; the supervisor will provide research guidance and general support. With the appropriate completion of major requirements and the honors project or thesis, the student will graduate with departmental honors as follows: "With Distinction," "With High Distinction," or "With Highest Distinction," as determined by the linguistics faculty.

Certificate in English Language Teaching. This program is designed for students who plan on teaching English to non-native speakers in the U.S. or abroad. The Certificate in Teaching English as a Second Language provides undergraduate-level training in applied linguistics and English language, as well as some practical preparation for English language teaching. It can be easily combined with a linguistics, education, English, or other major. To enroll in the program, see the director of the ESL Certificate Program or the linguistics undergraduate adviser.

The program consists of 4 courses and a practical component. The courses are: LING 200, 340, 394, and one of the following: LING 309, 313, or 205. The practical component consists of a total of 20 contact hours of language teaching/tutoring experience. This requirement may be filled by tutoring in the Rice Student Volunteer Program or by teaching in a high school or community ESL program. Students will be expected to write a short report on their teaching experience. Successful completion of the certificate program must be certified by the director of the ESL Certificate Program and will be indicated on the Rice transcript upon completion of degree requirements.

Doctoral Program. The doctoral linguistics program at Rice emphasizes the study of language use and functional/cognitive approaches to linguistic theory. Three areas of particular research strength in the department are: field studies of particular languages (e.g., languages of North and South America, including the Comparative Cariban Project; Austronesia; Africa; Europe; and East Asia); language and mind (cognitive linguistics, neurolinguistics, schema-based theories, lexical semantics); and language change (diachronic typology, grammaticalization theory, semantic change, language classification, Indo-European linguistics). Additional research areas represented are second language acquisition, applied linguistics, discourse analysis, and corpus linguistics.

The program admits students planning to study for the Ph.D. degree on a full-time basis. Undergraduate preparation should ideally include language study and course work in linguistics or disciplines related to linguistics, such as anthropology, applied linguistics, psychology, or computational modeling. Interdisciplinary interests are encouraged. A master's degree may be earned during progress to the Ph.D. degree. Admission to the program is competitive. Students admitted to the program are generally offered financial support in the form of tuition scholarships and/or stipends for living expenses.

During the first year of residence, each entering student works closely with the graduate adviser to choose a plan of study congruent with the demands of the program and the student's interests. Emphasis throughout the program is on a close working relationship with faculty. Students should select areas of specialization that fit well with faculty research interests and activities. (See the departmental homepage <<http://www.ruf.rice.edu/~ling>> for faculty research specializations.)

Students with master's degrees in linguistics will normally progress through the degree program in three to four years, those without in four to five. With no prior linguistics background, course work in the first two years will generally include 2 courses in the area of phonetics/phonology, 2 in the area of syntactic/semantic analysis, a two-course sequence in field methods, 1 problem-solving course in linguistic analysis, and at least 2 courses in other subfields of linguistics. Prior preparation in linguistics will be assessed with regard to its equivalence to particular Rice courses. Students are also normally expected to serve as teaching assistants for one course per year during the time they are receiving departmental support; such service is included in the normal course load. Graduate students are required to register for at least 12 hours credit per semester prior to advancing to candidacy.

At the end of the first year of study, students undergo an oral qualifying examination to assess their progress in the doctoral program. Continuation to the second year requires successful performance on this examination and in first-year course work. In each of the second and third years, in addition to their course work, students prepare an in-depth research paper on a topic chosen in consultation with a committee of faculty. These two papers will represent different areas of the field, and at least one will be on the structure of a non-Indo-European language. Students should work toward establishing a close working relationship with various faculty such that multiple faculty members are closely familiar with the student's work. After the second research paper is accepted, a dissertation adviser is selected and a doctoral committee formed, by mutual agreement of the student and the relevant faculty members.

Before advancing to candidacy, students must demonstrate reading competency in two research languages other than English. It is also expected that students submit their work for presentation at one or more professional meetings and publish such work in conference proceedings and/or journals. Funds may be available to defray the cost of travel to such meetings.

During the fourth year, students present to their doctoral committee a third research paper consisting of a substantial dissertation proposal and a comprehensive bibliography. This proposal, ideally building on their previous research, may take the form of a grant proposal to an external funding agency, particularly where fieldwork abroad is proposed. The proposal is also presented orally in a departmental forum. On acceptance of the proposal, the student formally advances to Ph.D. candidacy.

The doctoral research project may require fieldwork in residence or abroad prior to writing the dissertation. The student is expected to consult regularly with faculty members during the writing process. After a complete draft of the dissertation is submitted, the student defends the dissertation publicly. When the final version of the dissertation is accepted by the doctoral committee and filed with the university, and all other requirements are certified as filled, the degree is then granted.

See ARAB (page 245), CHIN (pages 276-278), HEBR (page 351), HIND (page 352), JAPA (page 385), KORE (page 385), LING (pages 386-393), SANS (page 456), and TIBT (page 476) in the Courses of Instruction section.

Managerial Studies

The School of Social Sciences

Degree Offered: B.A.

This interdepartmental, preprofessional program is intended for students planning management careers in either the public or the private sector. The B.A. serves either as a terminal degree or as preparation for graduate professional studies in accounting, law, business, or public management. Courses required for the managerial studies major are drawn from the Computational and Applied Mathematics, Economics, Political Science, Psychology, and Statistics departments and include accounting courses offered by the Jesse H. Jones Graduate School of Administration.

Majors acquire an understanding of both the environment in which enterprise operates and of the tools employed by managers in making decisions. Students electing the managerial studies major must also complete at least one other departmental or interdepartmental major (this does not include area majors).

Degree Requirements for B.A. in Managerial Studies

For general university requirements, see Graduation Requirements (pages 17-18). For the B.A. degree, students majoring in managerial studies must complete the following 11 core courses in addition to satisfying all the requirements for their second departmental or interdepartmental major:

ACCO 305 <i>Introduction to Accounting</i>	1 course from the following:
CAAM 376 <i>Introduction to Management Science</i>	ECON 436 <i>Regulation</i>
ECON 211 <i>Principles of Economics I</i> (microeconomics)	ECON 438 <i>Economics of the Law I</i>
ECON 212 <i>Principles of Economics II</i> (macroeconomics)	ECON 439 <i>Economics of the Law II</i>
ECON 448 <i>Corporation Finance</i>	POLI 335 <i>Political Environment of Business</i>
MANA 404 <i>Management Communications in a Consulting Simulation</i>	POLI 362 <i>European Integration</i>
PSYC 101 <i>Introduction to Psychology</i>	1 course from the following:
PSYC 231 <i>Industrial and Organizational Psychology</i>	ACCO 406 <i>Management Accounting</i>
STAT 280 <i>Elementary Applied Statistics</i> (or PSYC 339 <i>Statistical Methods—Psychology</i>)	ACCO 411 <i>Accounting Issues</i>
	ECON 370 <i>Microeconomic Theory</i> (or ECON 372 <i>Mathematical Microeconomics</i>)

MANA 404 is a capstone course that may not be taken until 8 of the 10 other required courses in the major have been completed. Students having strong mathematical backgrounds are encouraged to substitute courses that cover equivalent subject matter for STAT 280 and CAAM 376.

For more information, students should consult the program director, Dr. Stephen A. Zeff, in 352 Herring Hall.

See MANA (page 394) in the Courses of Instruction section.

Mathematics

The Wiess School of Natural Sciences

Chair

Frank Jones

Professors

Michael Boshernitzan

Robert M. Hardt

F. Reese Harvey

John Hempel

John C. Polking

Frank Ryan

Stephen W. Semmes

William A. Veech

Raymond O. Wells, Jr.

Associate Professors

Tim D. Cochran

Robin Forman

Zhiyong Gao

Michael Wolf

Assistant Professor

Richard A. Stong

Instructors

David J. Chase

Hany Farag

David S. Metzler

Kevin P. Scannell

Robert P. Stingley

Degrees Offered: B.A., M.A., Ph.D.

The program in mathematics provides undergraduates with a spectrum of choices, from nontheoretical treatments of calculus and courses in modern algebra, elementary number theory, and projective geometry to a broad variety of sophisticated mathematics. These include real and complex analysis, differential geometry, abstract algebra, algebraic and geometric topology, and partial differential equations.

Faculty research interests range from differential geometry, ergodic theory, group representation, partial differential equations, and probability, to real analysis, mathematical physics, complex variables, geometric topology, and algebraic topology.

Degree Requirements for B.A. in Mathematics

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in mathematics may choose between the regular math major and the double major. Regular math majors must complete:

- MATH 101 and 102 *Single Variable Calculus I and II*
- MATH 211 *Ordinary Differential Equations and Linear Algebra* and MATH 212 *Multivariable Calculus* (or MATH 221 and 222 *Honors Calculus III and IV*)
- At least 24 semester hours (8 courses) in departmental courses at the 300 level or above (in many instances, the math department will waive the 100- and 200-level courses for a math major)

The requirements for the double major are the same except that students may substitute approved mathematics-related courses for up to 9 of the 24 hours required at the 300 level or above.

Students receive advanced placement credit for MATH 101 by achieving a score of 4 or 5 on the AP AB-level test and for MATH 101 and 102 by achieving a score of

4 or 5 on the BC-level test. Students who have had calculus but have not taken the AP test may petition the department for a waiver of the calculus requirements. Entering students should enroll in the most advanced course commensurate with their background; advice is available from the mathematics faculty during Orientation Week.

Degree Requirements for M.A. and Ph.D. in Mathematics

Admission to graduate study in mathematics is granted to a limited number of students who have indicated an ability for advanced and original work. Normally, students take one or two years after the B.A. degree to obtain an M.A. degree, and they take four or five years to obtain a Ph.D. An M.A. is not a prerequisite for the Ph.D. For general university requirements, see Graduate Degrees (pages 72-76).

A number of graduate scholarships and fellowships are available, awarded on the basis of merit. As part of the graduate education in mathematics, students also engage in teaching or other instructional duties, generally for no more than 6 hours a week.

M.A. Program. Candidates for the M.A. in mathematics must:

- Complete with a grade of B or better a course of study approved by the department (students may transfer credits from another university only with the approval of both the department and the University Graduate Council)
- Perform satisfactorily on an examination in at least one approved foreign language (French, German, or Russian)
- Either complete all requirements for qualification as a candidate for the Ph.D. (see below) or present, and provide an oral defense of, an original thesis acceptable to the department

Ph.D. Program. Candidates for the Ph.D. in mathematics must:

- Complete with a grade of B or better a course of study approved by the department (students may transfer credits from another university only with the approval of both the department and the University Graduate Council)
- Perform satisfactorily on both qualifying examinations (see below)
- Perform satisfactorily on examinations in two approved foreign languages (French, German, or Russian)
- Write an original thesis acceptable to the department
- Perform satisfactorily on a final oral examination on the thesis

Qualifying Examinations. The qualifying examinations in mathematics consist of the general examinations and the advanced oral examination.

To complete the **general examinations**, students must take three exams, one each in algebra, analysis, and topology. Exams are offered every August and January. First-year students may take any combination of exams at any time. After two semesters of study, students must attempt to pass all remaining exams at each offering. Students must perform satisfactorily on all three by the start of their fifth semester. Students may take an exam several times.

To complete the **advanced oral examination**, students must select a special field (e.g., homotopy theory, several complex variables, or group theory) and submit it to the department Graduate Committee for approval. The committee schedules an advanced examination in the selected field, normally six to nine months after the student completes the general examinations. While students failing the advanced examination may, with the approval of the committee, retake it on the same or possibly on a different topic, they generally are not allowed to take the advanced examination more than twice.

See MATH (pages 394-397) in the Courses of Instruction section.

Mechanical Engineering and Materials Science

The George R. Brown School of Engineering

Chair

J. E. Akin, *Acting Chair, Fall '97 Semester*

Professors

John E. Akin

Andrew R. Barron

Yildiz Bayazitoglu

Michael M. Carroll

Rex B. McLellan

Ronald P. Nordgren

George M. Pharr

Pol D. Spanos

Chao-Cheng Wang

Professors Emeritus

Franz R. Brotzen

Alan J. Chapman

Angelo Miele

Adjunct Professors

Thomas A. Krouskop

Paul R. Paslay

Joseph R. Rodarte

Associate Professors

Yves C. Angel

Enrique V. Barrera

Bruce M. Lairson

Andrew J. Meade, Jr.

Adjunct Associate Professors

Jeffrey D. Reuben

Ian D. Walker

Visiting Associate Professor

Timothy P. Harrigan

Assistant Professors

S. Scott Collis

Fathi Ghorbel

Lecturers

Catherine G. Ambrose

Robert A. Cunningham

Joseph L. Kelly

Kevin N. Magee

David M. McStravick

Degrees Offered: B.A., B.S.M.E., B.S.M.S., M.M.E., M.M.S., M.S., Ph.D.

Studies in mechanical engineering may lead to specialization in one of several areas, including thermal sciences and energy conversion, computational mechanics, engineering mechanics, robotics, gas dynamics, and biomechanics. Studies in materials science focus on the fabrication, structure, and properties of materials used by engineers such as metals and their alloys, semiconductors, ceramics, glasses, polymers, and various composites.

The graduate program offers professional degrees in both materials science and engineering, which is based on undergraduate preparation in a number of related fields, and mechanical engineering, which permits specialization in thermal sciences and energy conversion, gas dynamics and hydrodynamics, stress analysis and mechanical behavior of materials, robotics and control, and aerospace engineering. Graduate students may also pursue research degrees. Faculty research interests fall in the areas of

theoretical and rock mechanics, heat transfer, biomedical engineering, fluid dynamics, optimization theory, materials science, and aeronautics and astronautics. A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Administration.

Degree Requirements for B.A., B.S.M.E., and B.S.M.S. in Mechanical Engineering or Materials Science and Engineering

The B.A. program in either mechanical engineering or materials science and engineering is highly flexible, involves less technical content, and allows students greater freedom to pursue areas of interest outside of engineering.

The two B.S. programs, both accredited by the Accreditation Board for Engineering and Technology (ABET), require more technical courses than the B.A. and prepare students for the professional practice of engineering. During their senior year, mechanical engineering students in the B.S. program take courses in computer-aided design and design applications while completing a major design project, and materials science and engineering students in the B.S. program work on a design problem in an industrial setting.

For general university requirements, see Graduation Requirements (pages 17-18). Lists of representative undergraduate courses and the usual order in which students take them are available from the department for either the B.A. or the B.S. programs in both mechanical engineering and materials science and engineering. All undergraduates must take the following courses:

Basic Courses

CAAM 335 *Foundations of Applied Mathematics I*
 CHEM 101-102 *General Chemistry*
 CHEM 105 *Introductory Lab in Quantitative Chemistry*
 MATH 101 and 102 *Single Variable Calculus I and II*

MATH 211 *Ordinary Differential Equations and Linear Algebra*
 MATH 212 *Multivariable Calculus*
 MECH 211 *Engineering Mechanics*
 MSCI 301 *Materials Science*
 PHYS 101 *Mechanics*
 PHYS 102 *Electricity and Magnetism*

B.A. Program. Students seeking the B.A. degree with a major in mechanical engineering must complete at least 63 semester hours in courses specified by the department. These include the basic courses (above) plus the following:

CAAM 211 *Introduction to Engineering Computation*
 CAAM 336 *Foundations of Applied Mathematics II*
 MECH 200 *Classical Thermodynamics*
 MECH 311 *Mechanics of Deformable Solids*
 MECH 371 *Fluid Mechanics I*
 MECH 411 *Analytical Dynamics*
 MECH 481 *Heat Transfer*

1 of the following paired courses:
 MECH 372 *Fluid Mechanics II* and
 MECH 471 *Applications of Thermodynamics*
 MECH 412 *Vibrations* and MECH 420
Feedback Control of Dynamic Systems
 CIVI 400 *Mechanics of Solids II* and
 MECH 401 *Mechanical Design Applications*

Of the remaining hours required to reach a total of 123 hours at graduation, 21 hours must be in courses at the 300 level or higher.

Students seeking the B.A. degree with a major in materials science and engineering must complete at least 52 hours in courses specified by the department, plus additional hours for a total of 120 hours at graduation.

B.S. Programs. Degrees offered include the Bachelor of Science in Mechanical Engineering (B.S.M.E.) and the Bachelor of Science in Materials Science and Engineering (B.S.M.S.).

Students seeking the ABET-accredited **B.S.M.E.** must complete 92 semester hours in courses specified by the department. These include the basic courses (page 181) plus the following:

CAAM 211 <i>Introduction to Engineering Computation</i>	MECH 401 <i>Mechanical Design Applications</i>
CAAM 336 <i>Foundations of Applied Mathematics II</i>	MECH 403 <i>Computer-Aided Design</i>
CIVI 400 <i>Mechanics of Solids II</i>	MECH 404 <i>Senior Design Project</i> (or MECH 408 <i>Mechanical Design Project II</i>)
ELEC 242 <i>Introduction to Circuits and Electronics</i>	MECH 411 <i>Analytical Dynamics</i>
MECH 200 <i>Classical Thermodynamics</i>	MECH 412 <i>Vibrations</i>
MECH 311 <i>Mechanics of Deformable Solids</i>	MECH 431 <i>Senior Lab I</i>
MECH 331 and 332 <i>Junior Lab I and II</i>	MECH 471 <i>Applications of Thermodynamics</i>
MECH 340 <i>Industrial Process Lab</i>	MECH 481 <i>Heat Transfer</i>
MECH 371 and 372 <i>Fluid Mechanics I and II</i>	MSCI 304 <i>Applied Materials Engineering</i>
	1 approved major design elective (3 hours)

Students seeking the ABET-accredited **B.S.M.S.** must complete at least 91 semester hours in courses specified by the department. These include the basic courses (page 181) plus the following:

CAAM 210 or 211 <i>Introduction to Engineering Computation</i>	MSCI 500 and 501 <i>Materials Science Seminar</i>
CIVI 300 <i>Mechanics of Solids</i>	MSCI 535 <i>Crystallography and Diffraction</i>
ELEC 242 <i>Introduction to Circuits and Electronics</i>	MSCI 537 <i>Materials Science Senior Lab</i>
MSCI 303 <i>Materials Science Junior Lab</i>	MSCI 594 <i>Properties of Polymers</i>
MSCI 311 <i>Introduction to Design</i>	1 course from the following:
MSCI 401 <i>Thermodynamics and Transport Phenomena in Materials Science</i>	PHYS 201 <i>Waves and Optics</i>
MSCI 402 <i>Mechanical Properties of Materials</i>	CHEM 211 <i>Organic Chemistry</i>
MSCI 404 <i>Materials Engineering and Design</i>	CHEM 311 <i>Physical Chemistry</i>
MSCI 406 <i>Physical Properties of Solids</i>	Electives
MSCI 411 <i>Metallography and Phase Relations</i>	1 approved science elective (at the 200 level or higher)
MSCI 415 <i>Ceramics and Glasses</i>	1 approved engineering science elective (not MSCI)
	1 approved technical elective

Degree Requirements for M.M.E., M.M.S., M.S., and Ph.D. in Mechanical Engineering or Materials Science and Engineering

Professional Degree Programs. The professional degrees offered by this department, the Master of Mechanical Engineering (M.M.E.) and the Master of Materials Science (M.M.S.), involve a fifth year of specialized study, which is integrated with the four undergraduate years leading to either the B.A. or the B.S. degree in the same areas of interest. The professional degree programs are open to students who have shown academic excellence in their undergraduate studies.

For general university requirements, see Graduate Degrees (pages 72-76). For both the M.M.E. and M.M.S. degrees, students must complete 30 semester hours of course work. Lists of suggested courses are available from the department. Students should develop a specific plan of study based on their particular interests.

Research Degree Programs. The programs leading to the M.S. and Ph.D. degrees are open to students who have demonstrated outstanding performance in their undergraduate studies. The granting of a graduate research degree presupposes academic work of superior quality and a demonstrated ability to do original research.

For general university requirements, see Graduate Degrees (pages 72-76). Course requirements for the research degrees vary, depending on the extent of individual undergraduate preparation as well as each student's performance in graduate courses and on qualifying examinations. For both the M.S. and Ph.D. degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

See MECH (pages 397-402) and MSCI (pages 404-406) in the Courses of Instruction section.

Medieval Studies

The School of Humanities

Director

Linda E. Neagley

Professors

Jane Chance
Gilbert Morris Cuthbertson
Katherine Fischer Drew
Michael P. Hammond
Maria Teresa Leal
Deborah Hubbard Nelson
John M. Stroup
Albert Van Helden
Joseph Wilson

Adjunct Professor

E. Douglas Mitchell

Associate Professors

Talya Fishman
Michael Maas
Honey Meconi
Donald Ray Morrison
David Nirenberg
Livia Polanyi
Carol E. Quillen
Paula Sanders
Hector N. Urrutibéheity
Kristine Gilmartin Wallace
Walter M. Widrig

Lecturer

Graciela S. Daichman

Degree Offered: B.A.

This interdisciplinary major enables students to compare medieval cultures, noting both their differences and their common traditions, in the period between 500 and 1500 A.D. The program combines a broad background in various aspects of medieval culture with more specialized study in a selected field. These fields of emphasis include art history, history, medieval literature (English, French, German, Spanish, Latin, or Greek), music, and philosophy or religion.

Degree Requirements for B.A. in Medieval Studies

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in medieval studies must complete at least 36 semester hours (12 courses); the minimum for double majors is 30 hours. All majors must take 6 of these medieval studies courses at the 300 or 400 level. Required courses include the following:

- 1 of the following 3 courses:
 - HIST 202 *Introduction to Medieval Civilization: Early Middle Ages*
 - HIST 203 *Introduction to Medieval Civilizations: High Middle Ages*
 - HUMA 103 *Introduction to Medieval Civilization: High Middle Ages*
- 1 medieval literature course, chosen in consultation with the medieval studies adviser
- 1 course in medieval art or music, such as:
 - HART 317 *Early Medieval Art from 5th Century to Romanesque*
 - HART 319 *Gothic Art and Architecture in Northern Europe, 1140-1300*
 - MUSI 222 *Medieval and Renaissance Music*
 - MUSI 429 *Music of the Middle Ages*

- 1 course in medieval philosophy or religion, such as:
 HIST 273/373 *Postbiblical Jewish History I*
 HIST 281/381 *History of Islamic Near East, 600-1258*
 PHIL 201 *History of Philosophy I*
 RELI 381 *Introduction to History of Western Christianity*
- Two semesters of foreign language study, determined in consultation with the medieval studies adviser
- 3 courses, at least 2 at the 300 or 400 level, in their chosen field of emphasis (1 of these may be a directed reading course)
- 2 additional courses in the medieval period, 1 of which may be a senior thesis on a topic in their field of emphasis (for single majors only)

Students work out their programs of study in consultation with the program director. Those contemplating graduate work in medieval studies should study at least one foreign language in some depth (most graduate schools require a reading knowledge of French and German for the Ph.D.).

Students may select from among the following to fulfill the course requirements for the major in medieval studies:

I. Language, Literature, and Culture

Classics

LATI 101 and 102 *Elementary Latin I and II*
 LATI 201 *Intermediate Latin I: Prose*
 LATI 202 *Intermediate Latin II: Poetry*

English

ENGL 283 *Early Women Writers from 1400 to 1900*
 ENGL 312/512 *Old English*
 ENGL 313/513 *Beowulf*
 ENGL 314/514 *Middle English Literature*
 ENGL 316 *Chaucer*
 ENGL 317 *Arthurian Literature*
 ENGL 318 *Tolkien*
 ENGL 412 *Medieval Studies*
 ENGL 413 *Dante*
 ENGL 515 *Reading Like/As a Woman: Christine de Pizan in 15th-Century England*
 ENGL 517 *Medieval Women*

French

FREN 403 *History and Stylistics of French Language*
 FREN 410 *Literature and Culture of the Middle Ages: King Arthur*
 FREN 415/515 *Courtly Love in Medieval France*
 FREN 510 *The Literary and Historical Image of the Medieval Woman*

German

GERM 321 *Viking Literature in Translation*
 GERM 405 *Introduction to Gothic and Old High German*
 GERM 407 *German Literature of the Middle Ages in Translation*
 GERM 411 *Introduction to Middle High German*
 GERM 412 *Middle High German Lyric and Epic Poetry*
 GERM 421 *German Literature: Medieval Germanic Literature and Mythology*
 GERM 424/524 *Special Topics: Old Icelandic*
 GERM 521 *Gothic*
 GERM 522 *Old High German*
 GERM 523 *Old Saxon*

Humanities

HUMA 103 *Introduction to Medieval Civilization*

Linguistics

LING 395 *History of the English Language*

SpanishSPAN 315 *Studies in Hispanic**Linguistics: Old Spanish*SPAN 418 *Medieval Spanish Literature*SPAN 518 *Studies in Medieval Spanish Literature***II. Art History, Music, Philosophy, Religion****History of Art**HART 205 *Introduction to History of Art*HART 309 *Late Antique/Early Christian Art and Architecture*HART 310 *Byzantine Art*HART 317 *Early Medieval Art from 5th Century to Romanesque*HART 319 *Gothic Art and Architecture in Northern Europe, 1140-1300*HART 370 *Late Gothic Art and Architecture in Northern Europe, 1300-1500*HART 494 *The Gothic Portal***Music**MUSI 222 *Medieval and Renaissance Music*MUSI 429 *Music of the Middle Ages***Philosophy**PHIL 201 *History of Philosophy I*PHIL 301 *Ancient and Medieval Philosophy***Religious Studies**RELI 381 *Introduction to the History of Western Christianity***III. History****History**HIST 154 *Life of Mohammad*HIST 202/325 *Introduction to Medieval Civilizations: Early Middle Ages*HIST 203/326 *Introduction to Medieval Civilizations: High Middle Ages*HIST 273/373 *Postbiblical Jewish History I*HIST 281/381 *History of the Islamic Near East, 600-1258*HIST 282/382 *History of the Islamic Near East, 1258-1805*HIST 284/384 *The Crusades: Holy War in Medieval Christendom and Islam*HIST 303-304 *Undergraduate Independent Reading*HIST 308 *The World of Late Antiquity*HIST 320 *Science in Antiquity and the Middle Ages*HIST 337 *History of Ancient and Medieval Law*HIST 345 *Renaissance Europe*HIST 359 *Roman Britain and Medieval England*HIST 386 *Introduction to Islam*HIST 438 *Women and Gender in Islamic Societies*HIST 439 *Christianity and the West*HIST 440 *Social and Economic History of Europe in the Middle Ages*HIST 460 *Advanced Seminar in Ancient History: The Age of Justinian*HIST 489 *Sex and Group Identity*HIST 521-522 *Directed Readings in Medieval History*HIST 581 *Graduate Seminar in Medieval History***Political Science**POLI 340 *Ancient and Medieval Political Theory*

Military Science

Lieutenant Colonel Julie A. Herrmann, *Chair*

Students participate in the military science program, or Army Reserve Officers' Training Corps (ROTC), through cross-enrollment with the University of Houston. Classes emphasize leadership and management, using instruction common to all branches of the U.S. Army. Students may complete their ROTC courses by enrolling in either a four-year program or a two-year program. Graduates are commissioned for active duty, in the Army Reserve or in the Army National Guard.

Degree Requirements for Military Science Program

For general university requirements, see Graduation Requirements (pages 17-18). Further details on ROTC programs at Rice are available on page 24. For more information on the Army ROTC program in particular, contact the Military Science Department at the University of Houston by calling (713) 743-3875.

Four-Year Program. The four-year program consists of a two-part basic course, which students take during their first and second years, and a two-part advanced course, which students take during their third and fourth years. Students enrolled in the first two years of ROTC participate with no military obligation. Veterans receive credit for the basic course and may enter the advanced course once they have completed at least 60 semester hours.

Two-Year Program. Students with two years of undergraduate study remaining are eligible to enter the advanced course following successful completion of a six-week basic camp. *There is no military obligation for attending basic camp.* Students attend basic camp during the summer at Fort Knox, Kentucky, and are paid approximately \$700 for the six-week period. Veterans are exempt from this requirement and may enter directly into the advanced course.

Advanced Camp. All students, whether in the two-year or in the four-year program, attend a six-week advanced camp at Fort Lewis, Washington, between their junior and senior years. Each student is paid approximately \$700 for this camp.

Financial Assistance. All contracted students, whether they have scholarships or not, receive a \$150 monthly stipend. Two-, three-, and four-year scholarships are available for students participating in the ROTC program at Rice. Students with a grade point average above 2.70 and students in technical majors are prime candidates for selection. The application deadline for four-year scholarships is in November; the deadline for three-year scholarships is in January. Scholarship students receive annual tuition assistance of up to \$12,800. The U.S. Army also covers the costs of books and educational fees (e.g., health, athletic, and lab fees) for scholarship students up to a maximum amount set annually by the U.S. Army Cadet Command.

See MILI (pages 403-404) in the Courses of Instruction section (these are University of Houston listings).

Music

The Shepherd School of Music

Dean

Michael P. Hammond

Professors

Edward Applebaum
Leone Buyse
Marcia J. Citron
Paul V. H. Ellison
Joyce Farwell
Norman Fischer
Raphael Fliegel
Armando Ghitalla
Kenneth Goldsmith
Clyde Holloway
Martha Strongin Katz
Paul C. Katz
Sergiu Luca
Ellsworth Milburn
Anne Schnoebelen
Kathleen Winkler

Associate Professors

Robert Atherholt
Walter B. Bailey
Wayne Brooks
Richard Brown
Arthur W. Gottschalk
Desmond Hoebig
Thomas I. Jaber
Benjamin C. Kamins
David E. Kirk
Richard A. Lavenda

Honey Meconi
William B. Murray
Paula Page
David Peck
Timothy Pitts
Larry Rachleff
Robert Roux
William Ver Meulen
David L. Waters
Michael Webster
Assistant Professor
Pierre D. Jalbert

Lecturer

Ken Dye

Artist Teachers

Brian Connelly
Jan de Chambrier
Debra Dickinson
Jeanne K. Fischer
Andrea Jaber
John Perry
Janet Rarick
C. Dean Shank, Jr.
James Wilt

Artist-in-Residence

Christoph Eschenbach

Adjunct Lecturer

Pieter A. Visser

Degrees Offered: B.A., B.Mus., B.Mus./M.Mus., M.Mus., D.M.A.

At the undergraduate level, The Shepherd School of Music offers both professional training and a broad liberal arts curriculum. Degree programs include a B.A. degree in music and a B.Mus. degree in performance, composition, music history, and music theory. Acceptance into a five-year honors program leads to the simultaneous awarding of the B.Mus. and M.Mus. degrees.

At the graduate level, the school offers professional music training for qualified students who concentrate on creative composition, performance, or research that is supported by lab or performing ensembles. This training includes theory and history seminars and professional apprenticeships. The apprenticeships present a number of options, including participation in major or civic orchestras, choirs, or opera companies; off-campus solo and small ensemble performances; training in conducting with professional orchestras, opera companies, and ballet companies; composition for film, television, public schools, and resident ensembles; and research in major national and international libraries. Advanced degree programs include a M.Mus. degree in composition, choral and instrumental conducting, historical musicology, performance, and music theory and a D.M.A. degree in composition and selected areas of performance.

Requirements for All Music Majors

All students majoring in music must participate in core music, applied music, and other required music courses, as well as in chamber music and large ensembles, taking nonmusic courses as specified by the university plus electives. They are entitled to 1 hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees. After the required four semesters of instrumental or vocal study, however, students in the B.A. program who wish to continue taking private lessons must obtain permission from the dean of the Shepherd School.

Examinations. At the end of each semester, a jury examination in applied music is given over the material studied during the semester. (All degree candidates except B.A. students must demonstrate keyboard proficiency in an examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.)

Performance. Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

Degree Requirements for B.A. in Music, B.Mus., and B.Mus./M.Mus.

Admission. An audition, either in person or on tape, is required of each undergraduate applicant. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation upon successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must also provide an audition, personal or taped, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

B.A. and B.Mus. Program. For general university requirements, see Graduation Requirements (pages 17-18). Notice that music majors may use MUSI 221 and 222 *Historical Studies I and II* as partial fulfillment of their Group I (humanities) distribution requirement. For either bachelor's degree, students majoring in music must have a total

of at least 120 semester hours at graduation. While the number of required hours varies according to major area, all students must take the following core courses (those in the B.A. program do not need to take MUSI 331, 332, and 431):

- MUSI 211, 212, 311, 312, and 411 *Theoretical Studies I, II, III, IV, and V*
- MUSI 221, 222, 321, 322, and 421 *Historical Studies I, II, III, IV, and V*
- MUSI 231, 232, 331, 332, and 431 *Aural Skills and Performance Techniques I, II, III, IV, and V*

B.Mus./M.Mus. Program. The same general university requirements apply, but students seeking the combined B.Mus./M.Mus. degree must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor's degrees (above). The sixth semester is a transitional semester during which students qualify for formal admission to candidacy for the master's degree and begin work in the advanced curriculum. For students who fail to qualify by the end of their sixth semester, registration for the advanced curriculum courses requires special permission. Students must complete at least five (5) and preferably six (6) distribution courses by the end of their sixth semester before the school can consider them for candidacy.

Candidates for the B.Mus./M.Mus. degree devote their final two years of study to the advanced curriculum (see below).

Degree Requirements for M.Mus. and D.M.A. in Music

Admission. For instrumental and conducting applicants, an audition is required. Composition majors must submit portfolios, and musicology and theory majors must provide samples of their written work. The Graduate Record Examination (GRE) including the advanced music tests, is also required of graduate applicants in musicology, theory, and composition.

Requirements. For general university requirements, see Graduate Degrees (pages 72-76). For the M.Mus. degree, candidates must complete at least two semesters of full-time study at Rice. Semester hour minimums for the M.Mus degree vary according to major area. For the D.M.A., candidates must complete a total of 90 hours beyond the bachelor's degree, attending Rice full-time for at least four semesters after receiving their M.Mus. degree.

Qualifying Examination. A qualifying examination determines whether students are admitted to their preferred major area in the advanced curriculum. For performance majors, this examination consists of the qualifying recital and an oral examination in music history and music theory based on the compositions to be performed in the qualifying recital.

Advanced Curriculum. Students focus on either creative composition, performance, or research. The curriculum also includes seminars and professional apprenticeships. The apprenticeships range from participation in professional orchestras to solo performance and from composition for television to library research. Students are responsible for arranging apprenticeships appropriate to their individual interests. The music faculty help in these arrangements whenever possible. Apprenticeships and any other specialized studies undertaken by students require the approval of the faculty.

Thesis. A thesis is required of both music history and music theory majors. In lieu of a thesis, composition majors must produce an original work of extended scope, and conducting majors must present an extended composition or project.

Academic Standards

Curriculum and Degree Requirements. Further information on curricular requirements for all majors and degree programs is available from The Shepherd School of Music.

Grading Policy. All music students must make at least a B- in course work in their major applied area. Students who receive a C+ or lower in their major applied area are placed on music probation. Students on music probation may not graduate unless they show prompt and marked improvement. While on probation, they may not be absent from class except for extraordinary reasons, and they may not represent the school in any public function that is not directly part of a degree program. After receiving a second C+ or lower in their major area, whether in consecutive semesters or not, students are discontinued as music majors.

Leaves of Absence and Voluntary Withdrawal. Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. (Students should explain the reasons for their withdrawal to the dean before leaving campus.)

Other Student Options for Music Education

For Nonmajors. Students who are not music majors may take the following courses designed for the general student (other music courses require the permission of the instructor and the approval of the dean of the Shepherd School):

- MUSI 117 and 118 *Fundamentals of Music I and II*
- MUSI 307 and 308 *Composition for Nonmajors I and II*
- MUSI 317 and 318 *Theory for Nonmajors I and II*
- MUSI 327 and 328 *Music Literature for Nonmajors I and II*
- MUSI 334 and 335 *Campanile Orchestra and Rice Chorale*
- MUSI 141-197 for individual instruction in all instruments

Lectures and Performances. A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Texas Opera Theater, Houston Ballet, Houston Oratorio Society, and Da Camera, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

See MUSI (pages 407-419) in the Courses of Instruction section.

Naval Science

Chair

James C. Boyer

Assistant Professors

Stephen W. Austin

Bryan J. Lethcoe

Boyd Wisniewski

Students enroll in the Navy Reserve Officers' Training Corps (ROTC) program as scholarship or nonscholarship students. Sophomores may apply for the optional two-year program. The Department of Naval Science is administered by a senior U.S. Navy officer, assisted by officers and enlisted personnel of the U.S. Navy and Marine Corps.

Degree Requirements for Naval Science Program

For general university requirements, see Graduation Requirements (pages 17-18). Further details on ROTC programs at Rice are available on page 24. Program requirements differ slightly depending on the student's scholarship status.

Scholarship Navy ROTC students are appointed midshipmen, U.S. Naval Reserve, on a nationwide competitive basis. They receive retainer pay of \$150 per month for a maximum of four academic years, with all tuition, fees, books, and equipment paid for by the government. Midshipmen must complete the prescribed naval science courses and participate in drills and three summer cruises. After graduating with a bachelor's or graduate degree, they accept a reserve commission as an ensign in the U.S. Navy or as a second lieutenant in the U.S. Marine Corps.

Nonscholarship Navy ROTC students are civilian college students who enter into a mutual contract with the Secretary of the Navy to take naval science courses and to participate in drills and one summer training cruise. On a competitive basis, students may apply to continue in the Navy ROTC program through their junior and senior years. The U.S. Navy pays these continuing students \$150 per month during their junior and senior years, offering them a reserve commission in the U.S. Navy or Marine Corps upon graduation. The program chair may recommend nonscholarship students, on a local competitive basis, for scholarship status.

Two-Year Program Option. In their sophomore year (junior year for five-year Rice students), students may apply for the two-year Navy ROTC program, competing nationwide for available scholarships. If selected, they attend the six-week Naval Science Institute (NSI) at Newport, Rhode Island, during July and August. NSI provides students with course material and training normally covered during the first two years of the regular Navy ROTC program. Successful completion of NSI qualifies students for enrollment in the advanced Navy ROTC program on an equal footing with the four-year students. Usually about 15 percent of the nonscholarship students finishing NSI are offered two-year Navy ROTC scholarships. Additional scholarships occasionally may be awarded to others upon the recommendation of the program chair.

U.S. Marine Corps Program. Navy ROTC students, either scholarship or nonscholarship, may apply for the U.S. Marine Corps program. Students selected for that program are referred to as "Marine Corps option students" and attend separate classes under a U.S. Marine officer instructor during their junior and senior years.

See NAVA (pages 419-420) in the Courses of Instruction section.

Philosophy

The School of Humanities

Chair

George Sher

Professors

Baruch Brody
Hugo Tristram Engelhardt, Jr.
Richard E. Grandy
Mark Kulstad
Larry S. Temkin

Associate Professors

Steven G. Crowell
Keith DeRose
Christopher R. Hitchcock
Donald Ray Morrison

Assistant Professor

Eric Margolis

Degrees Offered: B.A., M.A., Ph.D.

Philosophy is best described as the attempt to think clearly and deeply about the fundamental questions that arise for us as human beings. What is the nature of knowledge (epistemology)? How are we to distinguish between what really is and what only seems to be (metaphysics)? What is the right thing to do (ethics)? Is there any meaning to existence? To study the history of philosophy is to study the best, most enduring answers that have been given to these questions in the past. Because every other field of study adopts some stance toward these questions, though often implicitly, philosophical issues arise in the natural and social sciences, history, linguistics, literature, art, and so on. Special courses in philosophy deal with each of these. Characteristic of philosophy are commitments to the construction and evaluation of arguments, to expressing thoughts clearly and precisely, and to defending one's ideas and evaluating the ideas of others. The study of philosophy thus provides resources for critical participation in all realms of human endeavor.

The graduate program trains students to teach and pursue research in the main areas of department concentration: ethics (especially bioethics) and social and political philosophy, history of philosophy, Continental philosophy, and core portions of contemporary analytic philosophy.

Degree Requirements for B.A. in Philosophy

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in philosophy must complete 30 semester hours (10 departmental courses). At least 18 hours (6 courses) must be at the 300 level or above. A double major must complete 27 hours (9 departmental courses) with all other requirements remaining the same. Majors must take the following specific courses:

PHIL 201 and 202 <i>History of Philosophy</i> I and II	2 courses in the history of philosophy from the following:
PHIL 306 <i>Ethics</i> (or PHIL 307 <i>Social and Political Philosophy</i>)	PHIL 301 <i>Ancient and Medieval Philosophy</i>
PHIL 106 <i>Logic</i> (or PHIL 305 <i>Mathematical Logic</i>)	PHIL 302 <i>Modern Philosophy</i> PHIL 308 <i>Continental Philosophy</i>

Students may substitute PHIL 304 *Metaphysics*, PHIL 303 *Theory of Knowledge*, or PHIL 353 *Philosophy of Language* for one of the history courses.

Degree Requirements for M.A. and Ph.D. in Philosophy

For general university requirements, see Graduate Degrees (pages 72-76). Students have the additional option of applying for a doctoral program specializing in bioethics (see below).

For the **M.A.** in philosophy, candidates must:

- Complete with high standing at least 30 semester hours in advanced courses approved by the department
- Complete a written thesis on a subject approved by the department
- Perform satisfactorily on a final oral examination (not limited to the student's special field of study)

For the **Ph.D.** in philosophy, candidates must:

- Complete with high standing 42 hours of course work approved by the department (including logic)
- Demonstrate competence in logic
- Pass a qualifying examination
- Perform satisfactorily on an oral defense of their thesis proposal
- Complete a written thesis on a subject approved by the department (at least one year of thesis research must be spent in residence)
- Perform satisfactorily on a final oral examination (not limited to the student's special field of study)

Bioethics Program

The Ph.D. in philosophy with a specialization in medical ethics is offered in cooperation with the Center for Medical Ethics and Health Policy at Baylor College of Medicine. Applicants to this special program must have enough background in philosophy to complete two and a half years of strong general training in philosophy at the graduate level. After completing their general training, students receive instruction in clinical bioethics at Baylor College of Medicine and then write a dissertation drawing upon their philosophical and clinical training. Further information about this program is available from the Department of Philosophy.

Continental Philosophy Program

Beginning in 1997, we will offer a Ph.D. program in Continental philosophy. The program allows graduate students to take advantage of resource faculty in history, French studies, philosophy, and religious studies, all of whom have done distinguished philosophical work in the Continental tradition. Students master the basic fields of analytic philosophy while doing at least half their course work with resource faculty. Further information is available from the Department of Philosophy.

See PHIL (pages 421-424) in the Courses of Instruction section.

Physics

The Wiess School of Natural Sciences

Chair

Marjorie D. Corcoran

Professors

Stephen D. Baker
 Billy E. Bonner
 Ian M. Duck
 F. Barry Dunning
 Thomas L. Estle, *Emeritus*
 James P. Hannon
 Huey W. Huang
 Randall G. Hulet
 F. Curtis Michel
 Hannu E. Miettinen
 Gordon S. Mutchler
 Peter Nordlander
 Carl Rau
 Jabus B. Roberts, Jr.
 Richard E. Smalley

Paul M. Stevenson

George T. Trammell, *Emeritus*

G. King Walters

Associate Professor

Stanley A. Dodds

Assistant Professor

Qimiao Si

Distinguished Faculty Fellows

Edward B. Platner

Ken A. Smith

Senior Faculty Fellow

David L. Adams

Faculty Fellows

William J. Llope

B. Paul Padley

Pablo P. Yepes

Degrees Offered: B.A., M.A., Ph.D.

In addition to the regular undergraduate physics major, the Physics Department offers options in space physics and astronomy applied physics (which facilitates a double major in electrical engineering), and biophysics, as well as an interdepartmental major in chemical physics. Within the graduate program, research facilities and thesis supervision are available in atomic and molecular physics, biophysics, nuclear and particle physics, condensed matter and surface physics, and theoretical physics.

Degree Requirements for B.A. in Physics

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in physics may select the regular physics major or one of several options within the department, as well as an interdepartmental major in chemical physics. Students may obtain credit for some courses by advanced placement, and the department's Undergraduate Committee can modify requirements to meet the needs of students with special backgrounds. The physics requirements for double majors are the same as those for single majors, except that substitutions may be possible when students have taken comparable courses in other departments.

Regular Physics Major

PHYS 101 or 111 *Mechanics*
 PHYS 102 or 112 *Electricity and Magnetism*
 PHYS 201 *Waves and Optics*
 PHYS 202 *Modern Physics*
 PHYS 231 *Elementary Physics Lab II*
 MATH 101 and 102 *Single Variable Calculus I and II*
 MATH 211 *Ordinary Differential Equations and Linear Algebra*
 MATH 212 *Multivariable Calculus*
 (MATH 221 and 222 *Honors Calculus III and IV* may substitute for MATH 211 and 212)
 CHEM 101 and 102 *General Chemistry* or CHEM 111 and 112 *Principles of Chemistry*

Additional courses are required**For the regular physics major:**

PHYS 301 *Intermediate Mechanics*
 PHYS 302 *Intermediate Electrodynamics*
 PHYS 311 and 312 *Introduction to Quantum Physics I and II*
 PHYS 331 and 332 *Junior Physics Lab I and II*
 PHYS 411 *Introduction to Nuclear and Particle Physics* (or approved substitute)
 PHYS 412 *Solid-State Physics* (or approved substitute)
 PHYS 425 *Statistical and Thermal Physics*
 PHYS 431 and 432 *Senior Physics Research I and II*
 MATH 381 *Introduction to Partial Differential Equations*
 MATH 382 *Complex Analysis*
 (CAAM 335 and 336 *Foundations of Applied Mathematics I and II* may substitute for MATH 381 and 382)

For the physics major with option in space physics and astronomy:

PHYS 301 *Intermediate Mechanics*
 PHYS 302 *Intermediate Electrodynamics*

PHYS 311 and 312 *Introduction to Quantum Physics I and II*
 PHYS 331 *Junior Physics Lab I*
 PHYS 425 *Statistical and Thermal Physics*
 PHYS 431 and 432 *Senior Physics Research I and II*
 SPAC 250 *Introduction to Astrophysics*
 SPAC 300 *Undergraduate Seminar*
 SPAC 330 *Astronomy Laboratory*
 SPAC, two courses at 400 or 500 level
 MATH 381 *Introduction to Partial Differential Equations*
 MATH 382 *Complex Analysis*
 (CAAM 335 and 336 *Foundations of Applied Mathematics I and II* may substitute for MATH 381 and 382)

For the physics major with option in applied physics:

PHYS 301 *Intermediate Mechanics*
 PHYS 302 *Intermediate Electrodynamics*
 (ELEC 306 *Electromagnetic Fields and Devices* may substitute for PHYS 302)
 PHYS 311 and 312 *Introduction to Quantum Physics I and II*
 Two of PHYS 331 or 332 *Junior Physics Lab I or II* or ELEC 327 *Digital Logic Design Laboratory* or ELEC 342 *Electronic Circuits*
 One of PHYS 411 *Introduction to Nuclear and Particle Physics*, PHYS 412 *Solid-State Physics*, or ELEC 461 *Properties of Electronic Materials*
 PHYS 425 *Statistical and Thermal Physics*
 PHYS 431 and 432 *Senior Physics Research I and II*
 ELEC 241 *Electrical Circuits*
 MATH 381 *Introduction to Partial Differential Equations*
 MATH 382 *Complex Analysis*
 (CAAM 335 and 336 *Foundations of Applied Mathematics I and II* may substitute for MATH 381 and 382)

For the physics major with option in biophysics:

PHYS 301 Intermediate Mechanics
 PHYS 302 Intermediate Electro-dynamics
 PHYS 311 and 312 *Introduction to Quantum Physics I and II*
 BIOS 201 and 202 *Introductory Biology I and II*
 BIOS 301 *Biochemistry*
 BIOS elective (approved)
 CHEM 105 *Introductory Lab in Quantitative Chemistry*
 CHEM 211 and 212 *Organic Chemistry I and II*
 CHEM 213 and 214 *Organic Chemistry Lab I and II*

Chemical Physics Major**All chemical physics majors must complete the following courses:**

PHYS 101 or 111 *Mechanics*
 PHYS 102 or 112 *Electricity and Magnetism*
 PHYS 201 *Waves and Optics*
 PHYS 202 *Modern Physics*
 PHYS 231 *Elementary Physics Lab II*
 PHYS 301 *Intermediate Mechanics*
 PHYS 302 *Intermediate Electro-dynamics*

PHYS 311 and 312 *Introduction to Quantum Physics I and II*
 PHYS 331 and 332 *Junior Physics Lab I and II*
 (CHEM 313 *Experiments in Physical Chemistry* and CHEM 314 *Advanced Instrumental Laboratory* may substitute for PHYS 331 and 332)
 MATH 101 and 102 *Single Variable Calculus I and II*
 MATH 211 *Ordinary Differential Equations and Linear Algebra*
 MATH 212 *Multivariable Calculus*
 (MATH 221 and 222 *Honors Calculus III and IV* may substitute for MATH 211 and 212)
 MATH or CAAM, two semesters at 300 level or above
 CHEM 101 and 102 *General Chemistry* or CHEM 111 and 112 *Principles of Chemistry*
 CHEM 105 *Introductory Lab in Quantitative Chemistry*
 CHEM 211 and 212 *Organic Chemistry I and II*
 CHEM 213 and 214 *Organic Chemistry Lab I and II*
 CHEM 311 and 312 *Physical Chemistry I and II*

Degree Requirements for M.A. and Ph.D. in Physics

For general university requirements, see Graduate Degrees (pages 72-76). Detailed information on research programs in physics and specific departmental degree requirements are available from the Department of Physics.

M.A. Program. The M.A. degree requires at least one year of graduate study. Students must complete 30 semester hours of approved graduate-level studies, including a research thesis performed under the direction of a physics faculty member.

Ph.D. Program. To be eligible for the Ph.D. degree, graduate students must demonstrate to the department their ability to engage in advanced research; this is normally accomplished by successfully completing the work for the M.A. in physics. Students must also complete 60 semester hours of approved graduate-level study at Rice and produce a research thesis under the direction of a physics faculty member. At least two years of graduate study are required for the Ph.D.

See PHYS (pages 425-427) in the Courses of Instruction section.

Policy Studies

The School of Social Sciences

Director

Donald Ostdiek

Degree Offered: B.A.

This interdisciplinary major focuses on policy issues that are of public interest. Students in policy studies evaluate and analyze both the determinants and the effects of policy decisions, gaining an understanding of the policy-making process and acquiring an intellectual base for policy-making skills. The course of study addresses theoretical issues as well as applied and prescriptive policy questions.

Students may take policy studies *only as a second major*. It complements majors in any university department. For instance, engineering or science majors who are contemplating careers in business or government can investigate how technical innovations or regulations are adopted and implemented as matters of public policy, and humanities majors can explore career options where language skills are particularly valuable.

Students are encouraged to investigate research opportunities with Rice faculty. The School of Social Sciences sponsors the Faculty-Undergraduate Research Grant Program to fund collaborative research efforts. Students may also elect to participate in the Washington Semester Program at American University, which includes both course work and an internship within the federal government. See the policy studies director for more information on these programs.

Degree Requirements for B.A. in Policy Studies

For general university requirements, see Graduation Requirements (pages 17-18). Students may take the policy studies major only as a second major (their first major cannot also be in an interdepartmental program). Students majoring in policy studies must take the following 12 courses:

3 Social Science Courses

ECON 211 *Principles of Economics I*
(or ECON 212 *Principles of Economics II*)

2 courses from the following (each from a different discipline):

ANTH 201 *Introduction to Social/Cultural Anthropology*

(or ANTH 306 *History of Anthropological Ideas*)

POLI 210 *American Government and Politics*

(or POLI 211 *International Relations*
or POLI 212 *Introduction to Comparative Politics*)

PSYC 101 *Introduction to Psychology*
(or PSYC 102 *Readings in Psychology*)

SOCI 203 *Introduction to Sociology*
(or SOCI 353 *Conceptions of Human Nature*)

1 Statistical Methods Course

1 course from the following (or a more advanced course):

ECON 382 *Elements of Statistical Methods*
 STAT 280 *Elementary Applied Statistics*
 STAT 310 *Probability and Statistics*
 POLI 495 *Introduction to Statistics*
 PSYC 339 *Statistical Methods—Psychology*

1 Course in Analytical Approaches

SOSC 300 *Social Science and Public Policy*

3 Advanced Analysis Courses

3 courses from the following:

ANTH 313 *Language and Culture*
 ANTH 314 *Orality, Literacy, and Culture*
 ANTH 336 *Art of Ethnography*
 ECON 301 *History of Economic Analysis*
 ECON 370 *Microeconomic Theory*
 ECON 372 *Mathematical Microeconomics*
 ECON 375 *Macroeconomic Theory*
 ECON 416 *Economic History of U.S.*
 ECON 440 *Economics of Uncertainty*
 ECON 455 *Money and Financial Markets*
 ECON 483 *Public Finance*
 HIST 350 *America, 1900-1940*
 PHIL 307 *Social and Political Philosophy*
 POLI 317 *Congress*
 POLI 318 *Presidency*
 POLI 335 *Political Environment of Business*
 POLI 336 *Politics of Regulation*
 POLI 337 *Public Policy and Bureaucracy*
 POLI 338/SOSC 301 *Policy Analysis*
 POLI 339 *Southern Politics*
 POLI 380 *Political Behavior*
 PSYC 231 *Industrial and Organizational Psychology*
 SOCI 301 *Social Inequality*

SOCI 311 *Collective Behavior*

SOCI 425 *Sociological Approaches to Politics*

3 Applied Courses

3 courses from one of the following five groups:

1. Human Resources/Health/Welfare

ANTH 381 *Medical Anthropology*
 ANTH 386 *Human Nutrition*
 ANTH 388 *The Life Cycle*
 ECON 415 *Human Resources, Wages, and Welfare*

HIST 430 *Social Problems and Policy in 19th-Century Britain*

PHIL 315 *Ethics, Medicine, and Public Policy*

PSYC 332 *Abnormal Behavior*

RELI 462 and 463 *Medical Ethics and American Values I and II*

SOCI 309 *Race and Ethnic Relations*

SOCI 313 *Demography*

SOCI 345 *Sociology of Medicine*

SOCI 350 *Sociological Approaches to Poverty*

SOCI 370 *Sociology of Education*

SOCI 433 *Sociology of the Life Cycle*

SOSC 330 *Health Care Reform in the 50 States*

SOSC 420 *Health Care*

SOSC 430 *Shaping of Health Policy*

2. Foreign Policy/International Relations

ANTH 353 *Cultures of India*

ANTH 360 *Modernity and Social Space*

ECON 420 *International Economics*

ECON 421 *International Finance*

ECON 430 *Comparative Economic Systems*

ECON 451 *Political Economy of Latin America*

HIST 456 *Politics and Culture in Inter-war Europe*

HIST 464 *Foreign Policy of Nixon and Kissinger*

HIST 469 *U.S.-Latin American Relations*

POLI 351 *Politics of Southeast Asia*

POLI 354 *Latin American Politics*

POLI 360 *Western European Democracies*
 POLI 361 *Comparative Communist Systems*
 POLI 362 *European Integration*
 POLI 372 *American Foreign Policy*
 POLI 376 *International Political Economy*
 POLI 378 *Politics of American National Security*
 POLI 462 *Comparative Public Policy*

3. Law and Justice

ANTH 326 *Anthropology of Law*
 ANTH 419 *Law and Society*
 ECON 438 and 439 *Economics of the Law I and II*
 ENVI 406 *Introduction to Environmental Law*
 HIST 297/397 and 298/398 *Constitutional and Legal History of U.S. I and II*
 POLI 321 *American Constitutional Law*
 PHIL 101 *Contemporary Moral Issues*
 PHIL 307 *Social and Political Philosophy*
 PHIL 316 *Philosophy of Law*
 SOCI 321 *Criminology*

4. Quantitative Analysis

ECON 400 *Econometrics*
 ECON 472 *Introduction to Game Theory*
 CAAM/ECON 471 *Linear Programming*
 CAAM/ECON 475 *Integer and Combinatorial Optimization*
 CAAM/ECON 476 *Operations Research*
 PSYC 340 *Research Methods*
 SOCI 313 *Demography*
 SOCI 496 *Advanced Research Seminar: The Houston Area Survey*
 STAT 381 *Applied Probability*

STAT 410 *Introduction to Statistical Computing and Regression*
 STAT 420 *Quality and Process Control from an Experimental Design Perspective*
 STAT 421 *Introduction to Time Series Analysis*
 STAT 431 *Mathematical Statistics I*

5. Urban and Environmental Studies

ANTH 348 *America as a Culture*
 ECON 461 *Urban Economics*
 ECON 480 *Energy and Environmental Economics*
 ECON 483 *Public Finance*
 ENVI 306 *Global Environmental Law*
 ENVI 406 *Introduction to Environmental Law*
 POLI 331 *Environmental Politics and Policy*
 POLI 432 *Urban Politics*
 SOCI 309 *Race and Ethnic Relations*
 SOCI 313 *Demography*
 SOCI 350 *Sociological Approaches to Poverty*
 SOCI 367 *Environmental Sociology*
 SOCI 370 *Sociology of Education*
 SOCI 425 *Sociological Approaches to Politics*
 SOCI 441 *Minorities in the Schooling Process*
 SOCI 496 *Advanced Research Seminar: The Houston Area Survey*

1 Seminar (or Independent Research)

1 approved special topics seminar (or one semester of independent work involving a research paper on a policy topic)

Washington Semester Program. Students majoring in policy studies can participate in American University's Washington Semester Program. The Washington Semester Program offers a full semester of course work at American University in Washington, D.C. Students also participate in internships that bring them into contact with the operation of different branches of the federal government. American University offers separate programs in American politics, U.S. foreign policy, journalism, economic policy, justice, public law, and peace and conflict resolution. Students interested in the program should contact the policy studies director.

Political Science

The School of Social Sciences

Chair

Keith Edward Hamm

Professors

John S. Ambler
Earl Black
Paul Brace
Gilbert Morris Cuthbertson
Chandler Davidson
William P. Hobby
T. Clifton Morgan
Robert M. Stein
Richard J. Stoll
Fred R. von der Mehden
Rick K. Wilson

Associate Professor

John R. Alford

Assistant Professors

Sherry Bennett
David S. Brown
Carolyn L. Funk
Ellen Lust-Okar
Randolph T. Stevenson
Andrew B. Whitford

Lecturer

C. M. Hudspeth

Emeritus Professor

Robert H. Dix

Degrees Offered: B.A., M.A., Ph.D.

Students majoring in political science are encouraged to achieve both a broad understanding of the field and a specialized knowledge of one or more aspects of political science, including American political institutions and behavior, comparative politics, international relations, political philosophy and legal theory, empirical theory and method, and American public policy (see also majors in managerial studies and public policy). Graduate study is grounded in the general areas of American government (public policy, Congress, and intergovernment relations), comparative government (Western Europe, Latin America, and political development), and international relations (international conflict).

Degree Requirements for B.A. in Political Science

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in political science must complete 30 semester hours (10 courses) in the field of political science, plus 6 hours (2 courses) of upper-level work in any of the following fields: anthropology, economics, history, philosophy, psychology, or sociology. Students select their upper-level courses in consultation with the department adviser.

Double majors in one of the above fields may automatically substitute 6 hours (2 courses) in upper-level studies (at the 300 level or above) from their second field for 6 of the required 30 hours of political science courses. Double majors whose second major is managerial studies or policy studies may automatically substitute 3 hours (1 course). Double majors whose second major is in a field other than those listed above normally

must take the full 30 hours (10 courses) in political science; they may petition to substitute a course from another field for a political science course, but this is permitted only when the course to be substituted has a significant relationship to political science.

Students completing the B.A. in political science must:

- Take at least 1 course in any four of the following areas: American political institutions and behavior, comparative politics, international relations, political philosophy and legal theory, empirical theory and method, and American public policy
- Take 2 seminars, or courses at the 400 or 500 level, from different faculty members (reading courses do not satisfy this requirement, nor may students substitute courses taken in another department for these seminars)
- Take 1 additional seminar if they are participating in the honors program (see below)
- Complete 24 hours of regular course work before registering for POLI 305 and 306 *Directed Readings I and II* or POLI 405 and 406 *Senior Thesis*

Introductory Courses. POLI 209 *Introduction to Constitutionalism and Modern Political Thought*, POLI 210 *American Government and Politics*, POLI 211 *International Relations*, and POLI 212 *Introduction to Comparative Politics* constitute the introductory courses in political science. Although the department encourages prospective majors to take one or more of these courses, preferably in their first or second year, none of the introductory courses is required. Students should note, however, that POLI 210 is the course that meets the Texas state licensing requirements in political science for teachers. Students may count no more than 2 of the introductory courses toward their major requirements.

Directed Readings Courses. The faculty member supervising a directed readings course must have a full-time appointment, and a student may not take more than 1 readings course from him or her. Students should submit a brief, one-page description of the work to be conducted in the readings course (including the name of the faculty supervisor) to the department director of undergraduate studies no later than two weeks into the semester in which they intend to take the course. Readings courses do not count toward the department's distribution requirement.

Honors Program. Admission to the honors program requires the approval of the department director of undergraduate studies. During the first semester of the two-semester program, students take a readings course that provides them with a basis for drawing up a thesis prospectus. At the end of the first semester, a thesis committee composed of two full-time members of the political science department reviews and approves the prospectus. During the second semester, students write their honors thesis, which also must meet with committee approval. Students may not combine the two honors courses into one semester. Those who successfully complete the honors program may substitute it for one of the seminars required for the major. See also Honors Programs (page 34).

Degree Requirements for M.A. and Ph.D. in Political Science

For general university requirements, see Graduate Degrees (72-76). Students in the Ph.D. program must complete 48 semester hours in advanced courses or seminars prior to candidacy and conclude the degree program with the oral presentation of a dissertation displaying original research. Normally, students take the specified core courses in the three general fields of American government, comparative government, and inter-

national relations, completing additional course work and comprehensive examinations in two of those three fields. Before taking the comprehensive examinations, students must:

- Complete a course in statistical analysis
- Demonstrate some familiarity with traditional political theory
- Satisfy the language or skill requirement in their major field
- Complete all course requirements, including a two-semester sequence in scope and methods

Students select specific courses for graduate study in consultation with the faculty adviser.

See POLI (pages 428-436) in the Courses of Instruction section.

Psychology

The School of Social Sciences

Chair

Robert L. Dipboye

Professors

John W. Brelsford
Kenneth R. Laughery
Randi C. Martin
David J. Schneider
Ronald N. Taylor
Michael J. Watkins

Associate Professors

Richard R. Batsell
Sarah A. Burnett
David M. Lane
H. Albert Napier
Miguel A. Quiñones

Assistant Professors

Jeffrey S. Bowers
Steven C. Currall
Addie Dutta
Kathleen O'Connor

Adjunct Professors

John H. Byrne
J. Maxwell Elden
William C. Howell
Susan Jerger
John E. Overall
James R. Pomerantz
Anthony A. Wright

Adjunct Associate Professors

Jocelyne Bachevalier
Lindley E. Doran
Katherine A. Loveland
Deborah A. Pearson

Adjunct Assistant Professors

Janice Bordeaux
Betty S. Goldsberry
Vicki V. Vandaveer
Kevin C. Wooten

Adjunct Instructor

Roberta M. Diddel

Adjunct Lecturer

Lila F. Laux

Degrees Offered: B.A., M.A., Ph.D.

The undergraduate program offers the core preparation recommended by the nation's leading graduate schools of psychology, with advanced courses and research opportunities to fit individual needs. Programs of study may be structured around prospective careers in medicine, law, business, and education. Program emphasis in graduate study is on doctoral training, which requires course work in memory, cognition, engineering and industrial/organizational psychology, social psychology, and methodology. Faculty research interests include cognitive psychology (human memory, psycholinguistics, and information processing), cognitive neuropsychology (memory and language disorders), human factors (safety and reliability, risks and warnings, and human-computer interaction), and industrial/organizational psychology (personnel selection, training, work motivation, and group processes).

Degree Requirements for B.A. in Psychology

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in psychology must complete 29 semester hours in departmental courses, including the following required courses:

Core Courses

PSYC 101 *Introduction to Psychology*
 PSYC 202 *Introduction to Social Psychology*
 PSYC 203 *Introduction to Cognitive Psychology*
 PSYC 339 *Statistical Methods—Psychology*
 PSYC 340 *Research Methods*
 (no substitutions or transfer credits allowed for PSYC 339 or 340)

At least 1 course from each block:

Block 1

PSYC 308 *Memory*
 PSYC 309 *Psychology of Language*
 PSYC 350 *Psychology of Learning*
 PSYC 351 *Psychology of Perception*
 PSYC 362 *Biopsychology*

Block 2

PSYC 329 *Psychological Testing*
 PSYC 330 *Personality Theory*
 PSYC 332 *Abnormal Behavior*

Honors Program. To participate in the honors program, students must complete the major requirements listed above, write an honors thesis, and meet other requirements as determined by the student's honors committee (see Honors Programs on page 34). Candidates for the honors program must submit an application for faculty approval.

Degree Requirements for M.A. and Ph.D. in Psychology

For general university requirements, see Graduate Degrees (pages 72-76). For both M.A. and Ph.D. degrees, students must complete a research thesis, including its public oral defense, and accumulate 60 semester hours for the Ph.D. and 30 hours for the M.A. Course work includes required courses in certain areas, plus whatever offerings are available in the student's specialty area, either cognitive/experimental, industrial/organizational/social, or engineering psychology. While competence in a foreign language is not required, students must complete an admission-to-candidacy procedure that should establish their expertise in their chosen specialty.

See PSYC (pages 437-443) in the Courses of Instruction section.

Religious Studies

The School of Humanities

Chair

Anne C. Klein

Professors

Werner H. Kelber

John M. Stroup

Edith Wyschogrod

Associate Professor

Gerald P. McKenny

Assistant Professors

Elias K. Bongmba

Matthias Henze

Diana Lobel

William B. Parsons

Adjunct Professor

Stanley J. Reiser

Adjunct Assistant Professors

Elizabeth Heitman

Hugh W. Sanborn

Lecturer

Samuel E. Karff

Degrees Offered: B.A., M.A., Ph.D.

The undergraduate major includes courses in methodology (textual, historical, normative, and sociocultural approaches to the study of religion) and religious traditions (African religions, Buddhism, Christianity, comparative religions, Islam, and Judaism). The graduate program offers research degrees in 10 fields (see below). Within these clearly defined fields, students acquire a broad knowledge of religious studies with enough flexibility for interdisciplinary pursuits.

The Department of Religious Studies, in cooperation with the University of Texas Health Science Center, also offers a **Ph.D. in biomedical ethics** for students seeking to combine a rigorous training in religious studies (particularly theoretical approaches to ethics) with an interest in clinical and policy issues related to health care. The focus on health care distinguishes the program from those that concentrate more exclusively on moral philosophy or clinical ethics. Both the academic track and the professional track enable students to develop skills in interpreting religious/cultural texts and practices while engaging with theoretical and concrete issues in ethics, and the second track also prepares students to exercise clinical judgment, interpret cases, and engage in clinical research.

Degree Requirements for B.A. in Religious Studies

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring or double-majoring in religious studies must complete:

- 24 semester hours (8 departmental courses)
- 18 hours (6 courses) at the 200, 300 or 400 level
- No more than 6 hours (2 courses) outside of religious studies

In order to ensure breadth and depth to the major, students are encouraged to work out a program of study with the undergraduate adviser. The 8 courses are to be selected according to the following requirements:

- RELI 101 *Introduction to Religion* to be taken in the first or second year
- A majors seminar to be taken in the junior or senior year

- 3 courses to be selected from one of the following fields: Judaism, Christianity, African Religions, Buddhism, Comparative Studies, Cross-Cultural Studies, Methodological Studies, and Ethics
- 3 courses to be selected from at least two other fields

Students who wish to pursue a course of study more directly oriented toward their intellectual and personal interests are referred to the existence of the area major. See Other Options for Undergraduate Majors in the catalog. As a rule, area majors in religious studies will be required to write a thesis.

In addition, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a program totaling at least 120 semester hours. See Degree Requirements and Majors, etc., in the catalog.

Degree Requirements for M.A. and Ph.D. in Religious Studies

The graduate program accepts a limited number of qualified students. A distinguished undergraduate record and high scores on the Graduate Record Examination (GRE) are essential and, for Ph.D. applicants, an advanced degree in the humanities is desirable. For general university requirements, see Graduate Degrees (pages 72-76). Within the limits of available funds, fellowships and scholarships are awarded to qualified students. As part of their training, students usually assist the department in such areas as teaching or library work.

The M.A. in religious studies is a two-year program.

- Students take 8 courses in four fields (see Ph.D. field description below), with the distribution of these courses to be worked out with the graduate adviser and the student's own faculty mentor, chosen early in the first semester
- In addition to course work, students are required to pass a reading exam by the end of their third semester in an appropriate biblical, Asian, or European foreign language
- Exams consist of two qualifying papers in two separate fields; the first is to be completed by the end of the third semester, the second before spring break of the fourth semester
- Written exams are given in the remaining two fields, usually during the fourth semester

The Ph.D. in religious studies consists of 54 credit hours (18 courses); 6 courses are taken in the major field and 3 in each of two minor fields. The 6 remaining courses are selected at the discretion of the student in consultation with the graduate adviser and the student's own mentor. These 6 courses may augment one of the minors, be used for language study, or probe new areas of inquiry in religious studies. This flexibility presumes close and continuous consultation between faculty and student; each student selects a faculty mentor in his or her main field of study on entering the program. Should the focus of study or other circumstances change, a new mentor may be requested.

Students are strongly encouraged to take one minor outside the cultural/geographical area of their major; they are also encouraged to see major and minor alike as part of a cohesive body of study by exploring thematic contrasts and likenesses in these fields.

Majors can be in any of the following fields; however, at least one minor must be in an area other than the major. Thus, if the major is in Area I, at least one minor will be in Area II.

AREA I: TRADITIONS

Historical and textual studies in the following religious traditions:

1. Christianity and/or Judaism in Antiquity
2. Christianity and/or Judaism in the Modern World
3. Buddhism: Focus on India and Tibet
4. African Religions

AREA II: THEORIES AND METHODS

1. Ethics/Biomedical Ethics*
2. Psychology of Religion
3. Philosophy of Religion
4. Religion and Contemporary Culture
5. Comparative Studies
6. Mysticism

Languages. Because dissertation work in virtually all areas will involve foreign language materials, Ph.D. students in Religious Studies are required to gain sufficient linguistic training for their research. Language comprehensives may be taken in biblical, European, and Asian languages; generally, two languages other than English will be required. Advanced language courses with substantial thematic content may count toward the appropriate major or minor.

Reading Lists. Students become broadly familiar with the literature of their majors and minors; reading lists will be provided. Students are expected to familiarize themselves with this material such that they draw on it on their exams and the dissertation itself. The graduate seminar (see below) is, in part, an introduction to areas of the reading list and to the techniques for engaging in deep, independent reading.

Seminar. Each year beginning in 1998-99, a graduate seminar will be team-taught by two professors representing one tradition and one method. Graduate students are required to take at least one such seminar; tentatively projected for 1998 is a seminar on the history of religion as a field of inquiry from Spinoza to the present.

Teaching. Third- and fourth-year students are encouraged to take the opportunity to give lectures in appropriate departmental courses and to seek part-time employment in local colleges.

Qualifying for Dissertation Status. After completing course work, students will take three exams in their major area and one exam in each of their minors. The exams in the major will typically include one qualifying paper, which is intended to be a step toward the dissertation. The other two major exams can be either written responses to questions or a comprehensive paper; in either case, these will require an ability to survey the relevant literature in the reading lists. Minor exams can be either a response to questions, a comprehensive paper, or, less typically, a qualifying paper.

Some of the questions on these exams will be comparative, allowing the student to reflect on the relationship between their major and minor fields. Exact form and content of a particular student's exams are worked out with the graduate and the graduate adviser and faculty mentor by the end of the fourth semester, or one year before the student expects to take the exams. Upon completion of these exams, one may petition for candidacy. The dissertation-writing phase of the student's career begins with an oral discussion in which the student is encouraged to think out loud, in the company of faculty and fellow students, about the central questions of his or her study and the focus of the dissertation.

Rice University awards, on a competitive basis, four years of support for graduate study. We strongly encourage students to consult with faculty and the Financial Aid Office to identify funding possibilities for a fifth year to give sufficient time for reflection and writing of the dissertation.

***Degree Requirements for Ph.D. in Biomedical Ethics**

The Ph.D. program in biomedical ethics, operated in conjunction with the University of Texas, offers two tracks: one for those preparing to teach ethics and another for those seeking a career in a clinical or policy setting. The two tracks differ primarily in the course selection, made in consultation with the adviser and individual faculty members, and in the content of the Ph.D. comprehensive examination. For the Ph.D. in health care ethics, students must:

- Complete 54 semester hours of course work in the selected fields (see above)
- Pass reading examinations in two foreign languages
- Perform satisfactorily on examinations (see above), including written examinations in the two major fields of ethics and biomedical ethics
- Complete an approved thesis and present an oral defense

Internships. Students in the later stages of the program who seek careers in clinical areas, research institutes, or policy settings often have opportunities to conduct clinical research through internships with selected faculty members of the University of Texas Health Science Center.

See RELI (pages 444-453) in the Courses of Instruction section.

Sociology

The School of Social Sciences

Chair

Chandler Davidson

Professors

Lee Brown

Chad Gordon

Stephen L. Klineberg

William C. Martin

Associate Professor

Elizabeth Long

Assistant Professor

Angela Valenzuela

Degree Offered: B.A.

This undergraduate major fosters an analytic approach to the study of human societies that can serve as preparation for graduate work or a foundation for various careers. It is also an important component of a liberal arts education. Students within this major are free to pursue personal interests even as they become familiar with the basic theoretical approaches and research methods of sociology.

Degree Requirements for B.A. in Sociology

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in sociology must complete at least 30 semester hours (10 courses) in sociology courses, typically including the following:

SOCI 203 *Introduction to Sociology*

SOCI 390 *Research Methods*

SOCI 421 *Craft of Sociology*

At least 1 theory course, such as:

SOCI 317 *Sociological Theory*

SOCI 353 *Conceptions of Human Nature*

SOCI 395 *Feminist Social Thought*

At least 6 additional sociology courses:

A statistical analysis course, such as, STAT 280 *Elementary Applied Statistics*, PSYC 339 *Statistical Methods in Psychology*, POLI 495 *Introduction to Statistics*, may be used as one of these.

Sociology majors do not need to take a foreign language, but those planning graduate study ideally should be competent in at least one such language. Some sociology courses listed in the Courses of Instruction section may not be offered every year, and courses among the regular offerings are occasionally added or dropped. Students are responsible for making sure they satisfy all the requirements for their degree. One of the sociology faculty, preferably department adviser Professor Long, should sign each major's registration.

Honors Program. For general information, see Honors Programs (page 34). Students who have maintained a B average in at least four sociology courses beyond the introductory level may apply to enter the honors program. Students should submit their research plans during the first semester of their junior year, no later than two weeks

before registering for the spring semester. Proposals go to the Undergraduate Honors Committee (Professor Long, chair), which meets with students to evaluate and strengthen their proposals, then assigns a faculty adviser.

Students in the honors program register for two successive semesters in SOCI 492 and 493 *Directed Honors Research*. In SOCI 492, usually taken in the spring semester of the junior year, students normally review the relevant literature and prepare a detailed outline of the planned research. They carry out the research itself during the summer and fall of the senior year, completing an honors thesis in the second-semester (SOCI 493). After three members of the faculty have read and evaluated the thesis, students take an oral examination open to the public.

All honor students should complete SOCI 390 *Research Methods* and/or SOCI 421 *Craft of Sociology* before beginning their second semester of honors research.

See SOCI (pages 457-461) in the Courses of Instruction section.

Space Physics and Astronomy

The Wiess School of Natural Sciences

Chair

Patricia H. Reiff

Edison P. Liang, *Assistant Chair*

Professors

Paul A. Cloutier
Reginald J. Dufour
F. Barry Dunning
Arthur A. Few, Jr.
John W. Freeman
Robert C. Haymes
F. Curtis Michel
C. Robert O'Dell
G. King Walters
Jon C. Weisheit
Richard A. Wolf
Assistant Professors
Anthony A. Chan
Patrick M. Hartigan

Distinguished Faculty Fellows

Thomas W. Hill
Ken A. Smith
Senior Faculty Fellow
Tamara A. S. Ledley
Faculty Fellow

Frank R. Toffoletto
Adjunct Professors
David C. Black
Wendell Horton, Jr.
J. David Winningham
David T. Young

Adjunct Associate Professors
James H. Newman
Tomasz F. Stepinski

Degrees Offered:

B.A. (in physics with space physics and astronomy option), M.S., Ph.D.

Although the department does not offer an undergraduate degree, students interested in studies of cosmic phenomena may complete the B.A. in physics with the space physics and astronomy option (see major in physics). The Department of Space Physics and Astronomy offers graduate study in research areas that include ground- and space-based observational astronomy, theoretical astrophysics and space plasma physics, earth systems science, and solar system physics. To earn an advanced degree, students must be knowledgeable in several of these areas and expert in at least one. Details on research programs and degree requirements are available from the department.

Degree Requirements for B.A. in Physics with Space Physics and Astronomy Option

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in physics who have elected the space physics and astronomy option must satisfy the following course requirements:

First year

PHYS 101 or 111 *Mechanics*
 PHYS 102 or 112 *Electricity and Magnetism*
 CHEM 101-102 *General Chemistry*
 (or CHEM 111-112 *Principles of Chemistry*)
 MATH 101 and 102 *Single Variable Calculus I and II*

Second year

SPAC 250 *Introduction to Astrophysics*
 PHYS 201 *Waves and Optics*
 PHYS 202 *Modern Physics*
 PHYS 231 *Elementary Physics Lab II*
 PHYS 331 *Junior Physics Lab I*
 MATH 211 *Ordinary Differential Equations and Linear Algebra*
 and MATH 212 *Multivariable Calculus*
 (or MATH 221-222 *Honors Calculus III and IV*)

Third year

SPAC 300 *Undergraduate Seminar*
 SPAC 330 *Astronomy Lab*
 PHYS 301 *Intermediate Mechanics*
 PHYS 302 *Intermediate Electrodynamics*
 PHYS 425 *Statistical and Thermal Physics*
 MATH 381 *Introduction to Partial Differential Equations*
 and MATH 382 *Complex Analysis*

Fourth year

2 SPAC courses at 300 or 400 level
 PHYS 311 and 312 *Introduction to Quantum Physics I and II*
 PHYS 431 and 432 *Senior Physics Research I and II*

Undergraduates also are urged to develop some proficiency in computer programming before their junior year.

Degree Requirements for M.S. and Ph.D. in Space Physics and Astronomy

For general university requirements, see Graduate Degrees (pages 72-76). A bachelor's degree in physics or a closely related discipline is necessary for admission to the department. Program requirements are detailed in a booklet available from the department or from the World Wide Web at <<http://spacsun.rice.edu>>.

M.S. Program. Candidates for the M.S. degree must successfully:

- Demonstrate an understanding of physics and astronomy in an oral examination
- Complete at least 30 semester hours of approved advanced course work/research, and
- Prepare a written thesis on an original research topic and defend the thesis orally; or
- Complete at least 36 semester hours of approved advanced course-work and research, prepare a report on this research, and defend the report orally

Ph.D. Program. Doctoral candidates must show the capacity for independent, original research, and the doctoral thesis must be of a quality acceptable for publication in a reputable scientific journal.

Students normally are admitted to candidacy for the Ph.D. degree by satisfying the requirements for the M.S. degree in space physics and astronomy (see above). Students who already hold a recognized M.S. degree or who do not want to pursue a master's degree should follow the procedures described in the department booklet. Candidates who hold a M.S. degree could complete requirements for the Ph.D. in two years; otherwise it takes at least four years of graduate study (the average completion time has been 5.1 years). Candidates for the Ph.D. degree must successfully:

- Complete at least 60 semester hours of approved advanced course work/research
- Prepare a thesis on an original research topic
- Defend the thesis orally

See SPAC (pages 463-466) in the Courses of Instruction section.

Statistics

The George R. Brown School of Engineering

Chair

Marek Kimmel

Professors

John W. Brelsford, Jr.

Bryan W. Brown

Dennis Cox

Don Herrick Johnson

Paul Pfeiffer

David W. Scott

Robin Sickles

James R. Thompson

Edward E. Williams

Adjunct Professors

Barry W. Brown

David Cardus

Thomas D. Downs

Ralph F. Frankowski

Bartholomew P. Hsi

Birger Jansson

Howard D. Thames, Jr.

Robert A. White

Stuart D. Zimmerman

Associate Professors

Joe Dan Austin

Katherine Bennett Ensor

David M. Lane

Rick K. Wilson

Adjunct Associate Professors

E. Neely Atkinson

Carl S. Hacker

Dennis A. Johnston

Assistant Professor

Keith A. Baggerly

Lecturers

Peter Olofsson

Michael Pearlman

Degrees Offered: B.A., M.Stat., M.A., Ph.D.

Course work in statistics acquaints students with the role played in the modern world by probabilistic and statistical ideas and methods. Students grow familiar with both the theory and the applications of techniques in common use as they are trained in statistical research. The flexibility of the undergraduate program allows students to concentrate on theoretical or applied training, or they may link their studies in statistics to work in other related departments (see majors in economics, education, electrical and computer engineering, computational and applied mathematics, managerial studies, political science, and psychology). Graduate study has concentrations in applied probability, biomathematics, data analysis, density estimation, epidemiology, image processing, model building, quality control, statistical computing, stochastic processes, and time series analysis. A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Administration.

Degree Requirements for B.A. in Statistics

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in statistics normally complete the following:

- MATH 101 and 102 *Single Variable Calculus I and II*
- MATH 211 *Ordinary Differential Equations and Linear Algebra*
- CAAM 210 or 211 *Introduction to Engineering Computation*
- STAT 300 *Model Building*
- STAT 310 *Probability and Statistics*
- STAT 410 *Introduction to Statistical Computing and Regression*
- 5 elective courses from the Statistics Department (or other departments with approval from their adviser) at the 300 level or higher

Mathematically oriented students should also take MATH 212 *Multivariable Calculus* and MATH 355 *Linear Algebra* (or CAAM 310 *Linear Algebra*).

Degree Requirements for M.Stat., M.A., and Ph.D. in Statistics

For general university requirements, see Graduate Degrees (pages 72-76). Admissions applications should include scores on the Graduate Record Examination (GRE) in the quantitative, verbal, and analytical tests. Financial support is available for well-qualified doctoral students. Course work for all degree programs should be at the 400 level or above, although two (2) approved 300-level courses may be accepted.

Master's Programs. Candidates for the nonthesis **M.Stat.** degree must complete 30 semester hours of approved course work. Candidates for the **M.A.** degree in statistics must complete 30 semester hours of approved course work as well as an original thesis, which they defend in a public oral examination.

Ph.D. Program. Candidates for the Ph.D. degree in statistics must:

- Complete 90 semester hours of approved course work
- Perform satisfactorily on preliminary and qualifying examinations
- Complete an original thesis with a public oral defense

See STAT (pages 471-475) in the Courses of Instruction section.

The Program for the Study of Women and Gender

Director

Paula Sanders

Professors

Jane Chance

Marcia J. Citron

Margret Eifler

Chad Gordon

Anne C. Klein

Helena Michie

Associate Professors

Scott S. Derrick

Deborah A. Harter

Colleen R. Lamos

Elizabeth Long

Susan Lurie

Livia Polanyi

Carol E. Quillen

Daniel Sherman

Julie M. Taylor

Assistant Professors

Peter C. Caldwell

Jane Dailey

Lucille P. Fultz

Betty Joseph

Kathryn Milun

Angela Valenzuela

Lecturers

Graciela S. Daichman

Jill "Thad" Logan

Degrees Offered: B.A.

This undergraduate major takes an interdisciplinary approach in its exploration of women's experiences and the role that ideas about sexual differences have played in human societies. Areas of inquiry include women's participation in social and cultural production; the construction of gender roles and sexuality; the relationship between ideas about gender and concepts inherent in other social, political, and legal structures; and the implications of feminist theory for philosophical and epistemological traditions. Students acquire an understanding of how adopting gender as a significant category of analysis challenges existing disciplines. They also gain proficiency in the methods used to study and compare cultural constructions of gender and sexuality, and they become familiar with the ongoing fundamental debates in women's and gender studies.

Degree Requirements for B.A. in the Study of Women and Gender

For general university requirements, see Graduation Requirements (pages 17-18). Students majoring in the study of women and gender must complete:

- 36 semester hours of departmental course work (30 hours if this is a second major)
- WGST 101 *Introduction to the Study of Women and Gender*
- 1 capstone course
- At least 1 approved comparative course
- At least 1 approved theory course

Of the 8 remaining required courses, no more than 4 course may be from a single department. All students must work out their individual courses of study with their faculty advisers, and each student's course of study must be approved by the director of the major.

The following courses are among those that can be used to fulfill requirements for the major. As course offerings may vary from year to year, students are urged to consult with their faculty advisers or with the director at the beginning of each semester.

I. Courses That Satisfy the Core Requirements

- WGST 101 *Introduction to the Study of Women and Gender*
 WGST 407 *Introduction to Feminist Literary Theory and Criticism*

II. Courses That Satisfy the Comparative or Cross-cultural Requirement

- | | |
|--|---|
| WGST 249 <i>Women Writers from 1400-1900</i> | WGST 453 <i>Topics in African American Literature</i> |
| WGST 342 <i>Women in Greece and Rome</i> | WGST 454 <i>German Women Authors</i> |
| WGST 350 <i>Gender and Symbolism</i> | WGST 455 <i>Women and Gender in Islamic Societies</i> |
| WGST 352 <i>Feminism and Nationalism</i> | WGST 458 <i>Buddhist Meditation Theory: Women and Men</i> |
| WGST 354 <i>Survey: Chicano/a Poetry</i> | |
| WGST 357 <i>Buddhism and the Female</i> | |
| WGST 359 <i>Contemporary Women Film-makers</i> | |

III. Courses That Satisfy the Theory Requirement

- WGST 460 *Feminist Social Thought*
 WGST 480 *Feminist Literary Theory*

IV. Other Courses

- | | |
|---|---|
| WGST 214 <i>Introduction to Women's History</i> | WGST 338 <i>Gender and Society in Early Modern Europe</i> |
| WGST 215 <i>Women and Gender in Modern England</i> | WGST 402 <i>Feminist Issues: Gender and Immigration</i> |
| WGST 234 <i>A History of Women in America</i> | WGST 405 <i>Victorian Studies: Austen Only</i> |
| WGST 300 <i>Medieval Literature: Gender and Power in Old English Literature</i> | WGST 406 <i>Seminar: Christine De Pizan in 15th-Century England</i> |
| WGST 301 <i>Arthurian Literature</i> | WGST 407 <i>Introduction to Feminist Literary Theory and Criticism</i> |
| WGST 305 <i>Chaucer</i> | WGST 412 <i>Women in French Literature</i> |
| WGST 311 <i>Society and the Sexes in Modern France</i> | WGST 415 <i>Conceptions of Family and Gender in Jewish History</i> |
| WGST 314 <i>Introduction to Women's History</i> | WGST 416 <i>History of Men in Britain, 1750-Present</i> |
| WGST 324 <i>Sociology of Gender</i> | WGST 417 <i>Women in the American South</i> |
| WGST 325 <i>Sociology of the Family</i> | WGST 419 <i>Sex and Group Identity, from Biblical Times to the Modern United States</i> |
| WGST 326 <i>Sexuality and the Social Order</i> | WGST 430 <i>Studies in Literary Criticism: Queer Theory</i> |
| WGST 327 <i>20th-Century Women Writers: Sex, Gender, and Modernism</i> | WGST 433 <i>Theories in Modernity/Post-Modernity</i> |
| WGST 332 <i>Self, Sex, and Society in Ancient Greece</i> | WGST 439 <i>Women and Gender in Renaissance Italy</i> |
| WGST 335 <i>The Lifecycle: A Biocultural View</i> | WGST 440 <i>Women in Music</i> |
| WGST 336 <i>History as a Cultural Myth</i> | |
| WGST 337 <i>Feminist Issues: Witches, Saints, Soldiers, and Shrews: Women's Voices in the Renaissance</i> | |

See WGST (pages 477-482) in the Courses of Instruction section.

University Courses / Courses by School

The Schools of Humanities/Natural Sciences/Social Sciences

Humanities

See also majors in ancient Mediterranean civilizations, Asian studies, medieval studies, and the study of women and gender.

Foundation Courses. The humanities foundation courses provide a wide-ranging, critical, and integrated introduction to the humanities. By participating in small group discussions, attending occasional lectures, and writing essays, students engage with the enduring issues of Western civilization. For students majoring in departments within the School of Humanities, these foundation courses serve as an excellent foundation for advanced study. Other students benefit from their valuable contributions to general education, which is why they are required of all science, engineering, architecture, and music majors.

Business and the Humanities. HUMA 201 *Introduction to Business* is a fall-spring course that is part of the Rice Joint Venture Program. It enables liberal arts majors to explore possible careers in business, with an emphasis on basic business concepts. As part of the curriculum, students do internships with Houston-area businesses, acquiring an understanding of the business community while gaining valuable experience and business contacts.

Natural Sciences

Foundation Courses. Natural sciences foundation courses are offered in physics and astronomy (Science Today I) and in chemistry, biology, and earth sciences (Science Today II), as well as on computation methods used in the natural sciences.

Social Sciences

See also interdepartmental majors in policy studies (with the schools of Engineering and Humanities), in managerial studies (with the Jones Graduate School of Administration and the School of Engineering), and in cognitive sciences (with the Schools of Humanities and Engineering).

Foundation Courses. The foundation courses in the social sciences provide a broad historical introduction to thought about human society.

University Courses

University courses provide opportunities for dialogue across disciplinary and departmental boundaries. They are an experiment in curriculum development, directed toward students interested in interdisciplinary subjects beyond their elected major. Students, however, may not use these courses to satisfy their university distribution requirements.

See HUMA (pages 380-383), NSCI (page 420), SOSC (page 462), and UNIV (page 476) in the Courses of Instruction section.

*Courses of
Instruction*

Academic Calendar 1997-98

First Semester

Sunday to Friday, August 24-29	Orientation for new students
Monday, September 1	Labor Day holiday
Tuesday, September 2	FIRST DAY OF CLASSES
Tuesday to Friday	Registration for continuing undergraduates and graduate students
September 2-5	
Friday, September 12	Deadline: adding/dropping courses without fee, 5 P.M.
Friday, September 26	Deadline: adding courses and designating pass/fail option, 5 P.M.
Friday, October 3	Deadline: changing pass/fail to grade and instructors submitting grades to clear "incompletes," 5 P.M.
Friday, October 17	Midsemester grades for first-year students due, 5 P.M.
Monday to Tuesday, October 20-21 ..	Midterm recess
Wednesday, October 22	All classes normally held on Monday meet; all Wednesday classes canceled (to equalize holidays by days of the week during the semester)
Friday, October 24	College course plans due in Office of Student Affairs
Friday, October 31	Deadline: filing Ph.D. candidacy petitions in Office of Graduate Studies, 5 P.M.
Friday, November 7	Deadline: dropping courses and designating pass/fail option, 5 P.M.
Monday to Friday, ...	Preregistration for undergraduate students for spring semester
November 10-14	
Monday to Wednesday, ...	Self-scheduling final exams by undergraduates
November 24-26	
Thursday and Friday, ...	Thanksgiving recess
November 27-28	
Wednesday, December 10	LAST DAY OF CLASSES
	Deadline: dropping courses for first-semester students
Saturday to Saturday, ...	Final examinations
December 13-20	
Friday, January 2	All grades due in Registrar's Office, 5 P.M.
Fifteen weeks minus four class days for holidays—71 class days	

Second Semester

Monday, January 12	FIRST DAY OF CLASSES
Monday to Friday, ...	Registration for undergraduate and graduate students
January 12-16	

Friday, January 16	Deadline: resolving grades of "other" from Fall 1997, 5 P.M.
Monday, January 19	Martin Luther King, Jr., Day holiday
Friday, January 23	Deadline: adding/dropping courses without fee, 5 P.M.
Monday, February 2	Deadline: filing master's degree petitions (thesis programs) and petitions/certification forms for master's degrees without thesis in Office of Graduate Studies, 5 P.M.
Friday, February 6	Deadline: late registration and adding courses
Friday, February 13	Deadline: instructors submitting grades to clear "incompletes" and conversion of Fall 1997 pass/fail to graduate, 5 P.M.
Friday, February 20	College course plans due in Office of Student Affairs
Friday, February 20	Majors Day
Friday, February 27	Midsemester grades for first-year students due, 5 P.M.
Monday to Friday, March 2-6	Midterm recess
Friday, March 13	Deadline: sophomores filing majors with Registrar's Office
Friday, March 20	Deadline: dropping courses and designating pass/fail option, 5 P.M.
Monday to Friday, ... March 30-April 3	Preregistration for undergraduate students for fall semester
Thursday and Friday, April 9 and 10	Spring recess
Monday to Wednesday, ... April 13-15	Self-scheduling of final exams in undergraduate courses
Friday, April 24	Deadline: completing oral exams for advanced degrees to be awarded at spring graduation
Friday, April 24	LAST DAY OF CLASSES Deadline: dropping courses for first-semester students
Saturday to Thursday, ... April 25-30	Final examinations for all degree candidates Deadline: completing exams for degree candidates, Thursday, April 30, 12 noon
Wednesday to Wednesday, ... April 29-May 6	Final examinations for remaining students
Friday, May 1	Deadline: submitting thesis for spring graduation in Office of Graduate Studies, 12 noon
Saturday, May 2	Grades of all degree candidates due in Registrar's Office, 9 A.M.
Saturday, May 9	EIGHTY-FIFTH COMMENCEMENT

- Wednesday, May 13 Remaining grades due in Registrar's
Office,
5 P.M.
- Friday, June 5 **Deadline:** resolving grades of "other," 5
P.M.

How to Read Course Listings

Courses are listed in this section alphabetically *by their letter code*.

Course Numbers. Courses numbered 100 or 200 are lower-level or introductory courses. Those numbered 300 to 499 are upper-level courses, which are open to first- and second-year students with proper prerequisites and to graduate students with the approval of their department adviser. Courses for graduate students, numbered 500 and above, employ methods of presentation and demand a quality of work that make them generally unsuited to undergraduate participation. Undergraduates may enroll in graduate-level courses only after consultation both with their advisers and with the instructor of the course. Certain lower-level courses may have corresponding “enriched” versions at higher levels, requiring more advanced study and additional course work.

Semester. F (fall) or S (spring) following the course number indicates the semester the course is normally given. Those courses without F or S preceding their title are offered in both the fall and spring semesters.

Hours. Figures in parentheses following the title of each course signify the number of class hours per week, the number of lab hours per week, and the credit in semester hours for the completed course, in that order.

Availability. Whether courses are offered often depends on available faculty, student demand, or funding. Courses that are definitely unavailable in 1997-98 are identified by the phrase “Not offered 1997-98.” Uncertain availability is indicated by the designation “Not offered every year.” The notation “Also offered as . . .” points to identical courses available for enrollment through more than one department.

Description. Course descriptions often list topics to characterize their subject matter. Topics actually covered in the courses, however, may vary from the examples given. Courses are subject to cancellation or modification, but cancellation of a course after final enrollment occurs only in extreme circumstances.

Restrictions. Various restrictions on enrollment may appear in the listings, indicating that courses are open only to certain students or that enrollment is limited (the number following in parentheses giving the maximum number of students). Courses that students must take, or approvals they must obtain, before enrolling for a particular course are identified as *Prerequisites*. *Corequisites* are courses that students should take in conjunction with the particular course.

Further Information. Students may obtain more detailed information about courses from the Registrar’s *Schedule of Courses Offered* published each year or from the instructor of the course.

Transcripts. Persons using this catalog to evaluate Rice University transcripts should refer to course titles and descriptions, rather than the course numbers, to determine content, because course numbers are occasionally changed.

Accounting (ACCO)

The Jesse H. Jones Graduate School of Administration

ACCO 305 INTRODUCTION TO ACCOUNTING (3-0-3)

Survey of basic accounting theory and practice, with emphasis on primary problems of asset valuation and income determination. Preregistration required (must sign a reservation list in 250 Herring Hall). Not open to first-year students (freshmen).

ACCO 406(S) MANAGEMENT ACCOUNTING (3-0-3)

Survey of uses of accounting data to plan and evaluate the long-run investment and financing decisions and short-run price, costing, output, and financing decisions of a business firm or public entity. Prerequisites: ACCO 305 and ECON 211.

ACCO 411(F) ACCOUNTING ISSUES (3-0-3)

Exploration of major questions of asset valuation and income determination in the context of accounting theory. Includes evolving financial, economic, and political factors that have shaped existing standards, as well as discussion of the standard-setting process. Prerequisite: ACCO 305

ACCO 497(F) INDEPENDENT STUDY (3-0-3 each semester)

ACCO 498(S)

Independent study or directed reading on an approved project under faculty supervision. Prerequisite: special permission.

ACCO 501(F) FINANCIAL ACCOUNTING (3-0-3)

Introduction to accounting theory and practice, with emphasis on primary problems of asset valuation and income determination. Required for M.B.A. Prerequisites: graduate standing and permission of school.

ACCO 502(S) MANAGEMENT ACCOUNTING (2-0-2)

Introduction to accounting systems designed to facilitate the evaluation and control of internal decision making by private and public organizations, with emphasis on the behavioral impact of alternative internal reporting schemes. Required for M.B.A. Prerequisite: ACCO 501.

ACCO 504(S) STRATEGIC COST MANAGEMENT (3-0-3)

Case-oriented study of the design and implementation of cost management practices to support the strategic position and goals of a firm. Includes activity-based management, business process redesign, financial and nonfinancial performance measurement, total quality management, and value chain analysis. Prerequisites: graduate standing and ACCO 502 (or equivalent).

ACCO 506(S) CORPORATE FINANCIAL REPORTING (3-0-3)

Examination of the preparation of financial statements and the manager's use of financial accounting data, showing how accounting standards, corporate business policy, and the manager's motives shape accounting policies and procedures that are then reflected in financial reports. Includes accounting method choice, off-balance sheet liability, goodwill, stock compensation plans, leases, pensions, deferred taxes, consolidations, multinational operations, and international accounting standards. Prerequisite: ACCO 501 (or equivalent).

ACCO 509(F) FINANCIAL STATEMENT ANALYSIS (3-0-3)

Examination of how investors, financial analysts, creditors, and managers use financial statement information, with emphasis on the analysis of corporate financial information for firm equity valuation, earnings forecasting, the prediction of financial distress, bond ratings, changes in capital structure, mergers and acquisitions, and credit granting. Includes the use of cases, problems, and readings from empirical research to illustrate the application of statistical methods, finance theory and financial accounting concepts in the analysis of financial information. Prerequisite: ACCO 501 (or equivalent).

ACCO 511(F) ACCOUNTING ISSUES (3-0-3)

Graduate version of ACCO 411. Prerequisites: graduate standing and ACCO 501 (or equivalent).

ACCO 521(F) MANAGEMENT ACCOUNTING AND FINANCE (3-0-3)

Study of financial statements and accounting in relation to financial analysis, investment, and capital structure decisions, with emphasis on capital budgeting and financial theory from the perspective of management. Required for M.B.A. Corequisites: graduate standing and ACCO 501 (or equivalent).

ACCO 523(F) INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS (1-0-1)

Overview of management information systems, with emphasis on effectively managing the use of information technology in organizations. Required for M.B.A. Prerequisites: graduate standing and permission of school.

ACCO 526(S) ORGANIZATIONAL COMPUTING (3-0-3)

Examination of the role of the MIS function in helping or hindering an enterprise's ability to respond to the sweeping changes associated with global competition and information technology. Includes readings, case studies, and projects exploring technology, people, organizations, business processes, the marketplace, and market space, with emphasis on expert and decision support systems, groupware, and electronic commerce. Prerequisite: ACCO 523 or permission of instructor.

ACCO 527(F) INFORMATION TECHNOLOGY TOPICS (3-0-3)

Examination of current topics in information technology. Prerequisite: ACCO 523 or permission of instructor.

ACCO 528(S) SYSTEMS ANALYSIS AND DESIGN (3-0-3)

Exploration of concepts related to systems analysis, design, development, and implementation. Prerequisite: ACCO 523 or permission of instructor.

ACCO 531(F) FEDERAL TAXATION OF BUSINESS ENTERPRISES (3-0-3)

Introductory tax course covering basic concepts of business income and deductions and comparative forms of business organization, with emphasis on partnerships and corporations. Includes limited elements of tax research and tax planning. Prerequisites: graduate standing and ACCO 501 (or equivalent).

ACCO 532(S) FEDERAL TAXATION OF INDIVIDUALS (3-0-3)

Study of U.S. individual income taxation. Includes tax planning and tax-favored retirement plans. Prerequisites: ACCO 501 or 531 and permission of instructor. Not offered every year.

ACCO 534(S) SPECIAL TOPICS IN TAXATION (hours variable)

Topics vary. Prerequisite: ACCO 531. Not offered every year.

ACCO 597(F) INDEPENDENT STUDY (hours variable)**ACCO 598(S)**

Independent study or directed reading on an approved project under faculty supervision. Prerequisite: special permission.

Administrative Science (ADMN)

The Jesse H. Jones Graduate School of Administration

ADMN 501(F) DEAN'S SEMINAR I (0)

Seminar during which invited speakers discuss a variety of management topics. Includes program in career management conducted by the JGS Career Planning Center. Required for first-year M.B.A. students. Prerequisites: graduate standing and permission of school.

ADMN 502(S) DEAN'S SEMINAR II (0)

See ADMN 501. Required for M.B.A.

ADMN 503(F) DEAN'S SEMINAR III (0)

See ADMN 501. Required for second-year M.B.A. students.

ADMN 504(S) DEAN'S SEMINAR IV (1-0-1)

See ADMN 501. Required for M.B.A.

May earn credit for ADMN 501-504 series only after completing ADMN 504. Attendance required. Credit requires satisfactory completion of ADMN 501-502-503.

ADMN 505(F) FACULTY RESEARCH SEMINAR (0)

ADMN 506(S)

Periodic meetings of faculty and invited guests to present current research findings.

ADMN 507(F) MANAGERIAL COMMUNICATION (2-0-2)

Introduction to corporate communication strategy and international communication. Includes extensive practice in delivering oral presentations and composing effective written communication. Required for M.B.A. Prerequisites: graduate standing and permission of school.

ADMN 512(S) ORGANIZATIONAL BEHAVIOR (3-0-3)

Examination of theoretical and empirical psychology applied in organizational settings, the development of organization theory, current approaches to the study of complex organizations, and the operation of typical complex organizations in both private and public sectors. Required for M.B.A. Prerequisites: graduate standing and permission of school.

ADMN 515(F) STRATEGIC HUMAN RESOURCE MANAGEMENT (3-0-3)

Exploration of contributions of human resource management to the formulation and implementation of business strategy, with emphasis on obtaining sustainable competitive advantage through human resource management practices. Prerequisite: ADMN 512 or permission of instructor.

ADMN 517(F) MANAGERIAL DECISION MAKING (3-0-3)

Review of current theories of decision making in and by organizations, with emphasis on behavioral decision theory, human problem solving, and organizational processes. Prerequisite: graduate standing.

ADMN 520(S) ENTREPRENEURSHIP (3-0-3)

Review of methods used in starting a business, the economics of new businesses, analyzing new ventures, sweat equity, and legal, tax, and accounting aspects of new venture creation. Includes leveraged buyouts and going public. Required for M.B.A. Prerequisite: ADMN 541.

ADMN 521(F) THE NEW ENTERPRISE (3-0-3)

Study of the economics of new businesses, leadership and motivation, legal and tax aspects of new ventures, and venture capital. Includes preparation of a business plan. Prerequisite: ADMN 541.

ADMN 523(F) ENTREPRENEURIAL MANAGEMENT (3-0-3)

Study of the management of entrepreneurial enterprises. Prerequisite: ADMN 520.

ADMN 524(S) REAL ESTATE INVESTMENT AND DEVELOPMENT (3-0-3)

Identification and analysis of real estate investment and development opportunities. Limited enrollment. Prerequisites: ACCO 521 and permission of instructor.

ADMN 526(S) VENTURE CAPITAL (3-0-3)

Overview of the venture capital industry, the organization and operation of venture capital funds, investment methodology, monitoring and portfolio liquidation, leveraged investing, and specialized investments. Prerequisite: ACCO 521 or permission of instructor.

ADMN 527(S) ENTERPRISE EXCHANGE (3-0-3)

Exploration of ways to negotiate, the "needs" approach to buying and selling a business, enterprise valuation, deal and contract structuring, mergers and acquisitions, and leveraged buyouts. Limited enrollment. Prerequisites: ADMN 541 and permission of instructor.

ADMN 532(S) STATISTICS AND DECISION ANALYSIS (3-0-3)

Study of statistical methods and computer systems used to analyze decision problems. Includes product design as an illustration of marketing management. Required for M.B.A. Prerequisites: graduate standing and permission of school.

ADMN 541(F) MANAGERIAL ECONOMICS (2-0-2)

Examination of long-run and short-run price and production decisions by private and public economic entities in the face of differing demand conditions and market environments. Required for M.B.A. Prerequisites: graduate standing and permission of school.

ADMN 542(S) MACRO AND INTERNATIONAL ECONOMICS (2-0-2)

Study of modern political economy, productivity and aggregate economics, the basic Keynesian model, neoclassical macroeconomics, and international economics. Required for M.B.A. Prerequisite: ADMN 541.

ADMN 543(F) PORTFOLIO MANAGEMENT I (1-0-1)

Exploration of professional money management. Includes review of all aspects of security analysis, portfolio management, and performance measurement, with emphasis on the class's effort to evaluate securities and arrive at actual buy/sell decisions. Limited enrollment (individual applications reviewed by instructor). Prerequisite: ACCO 521. Co-/Prerequisite: ADMN 545.

ADMN 544(S) PORTFOLIO MANAGEMENT II (2-0-2)

Continuation of ADMN 543. Prerequisite: ADMN 543.

ADMN 545(F) INVESTMENTS (3-0-3)

Review of classic investment theory, with emphasis on measuring and managing investment risk and return. Includes the development of modern portfolio theory and asset pricing models, an introduction to option and futures contracts (further developed in ADMN 550, 555, and 557), and market efficiency and stock valuation. Recommended for finance students. Prerequisite: ACCO 521.

ADMN 546(S) CORPORATE FINANCIAL STRATEGY (3-0-3)

Exploration of value creation, diversification, risk-benefit analysis, tax policy, and present value with emphasis on practical problems of the corporation. Prerequisite: ADMN 547 or permission of instructor.

ADMN 547(F) CORPORATE FINANCIAL MANAGEMENT (3-0-3)

Examination of corporate investment and financing, with emphasis on valuation methods and how financial policy impacts corporate value. Includes the implications of agency costs, asymmetric information and signaling, taxes, mergers and acquisitions, corporate restructuring, real and embedded options, and financial risk management. Recommended for finance students. Prerequisite: ACCO 521.

ADMN 550(S) FUTURES AND OPTIONS (3-0-3)

Study of futures and options contracts within a valuation framework that emphasizes determination of contract value and provides a context for evaluating hedging and speculative trading strategies. Includes the application of valuation principles to derivative markets such as stocks, stock indexes, fixed-income securities, and currencies. Prerequisite: ADMN 545 or permission of instructor.

ADMN 552(S) INVESTMENT BANKING (3-0-3)

Analysis of the characteristics of the investment banking industry, with emphasis on corporate financial transactions. Includes public offerings, private placements of debt and equity, and mergers and acquisitions. Prerequisite: ADMN 545 or permission of instructor.

ADMN 554(S) COMMERCIAL BANKING (3-0-3)

Survey of important features of financial intermediation, with emphasis on the economic analysis of particular practices, contracts, instruments, and institutions in the deposit-taking intermediary market. Includes the intermediary's sources of risk and its management. Prerequisite: ACCO 521.

ADMN 555(F) FINANCIAL INNOVATION (3-0-3)

Study of the creation of financial contracts that have nonstandard packages of cash flows. Includes hybrid credit instruments, risk management techniques (including futures, options, and swaps) and mortgage-backed securities. Prerequisite: ACCO 521. Not offered every year.

ADMN 557(F) INTERNATIONAL FINANCE (3-0-3)

Exploration of special problems encountered by financial officers in international arenas. Includes the operation and economics of the foreign exchange market, exchange rate behavior, exchange risk exposure measurement, currency hedging techniques, capital budgeting for international projects, and international financing strategy. Prerequisite: ACCO 521 or permission of instructor.

ADMN 558(S) GLOBAL CAPITAL MARKETS (3-0-3)

Analysis of international equity, fixed income, derivative, and money markets from perspective of an international investor and an international equity or fixed-income issuer. Includes investigation of the effects of different institutional arrangements and microstructures on market activity. Prerequisite: ACCO 521 or permission of instructor.

ADMN 561(F) LEGAL AND GOVERNMENTAL PROCESSES I (3-0-3)

Examination of the government's impact on decision making in business. Includes comparison of governmental intervention across major industrial systems, an analysis of environmental trends, and an exploration of public policy options. Required for M.B.A. Prerequisites: graduate standing and permission of school.

ADMN 562(S) LEGAL AND GOVERNMENTAL PROCESSES II (3-0-3)

Study of law as a medium in which American society and business function. Includes legal history, jurisprudential bases, and the theory and practice of principal kinds of law (common law, statutory law, constitutional law, and law of government control). Required for M.B.A. Prerequisite: ADMN 561 and permission of school.

DMN 565(F) PUBLIC FINANCIAL MANAGEMENT (3-0-3)

Study of the political, economic, and accounting dimensions of financial management in public and nonprofit organizations, with emphasis on budgeting systems, appropriations processes, cost-benefit analysis, taxation, pricing, fund accounting, debt management, and financial administration. Prerequisite: permission of instructor. Not offered every year.

DMN 574(S) INTERNATIONAL BUSINESS LAW (3-0-3)

Exploration of U.S. and foreign law as it relates to the law-business interface of importing-exporting trade problems, foreign operations, and foreign investments. Includes the extraterritorial impact of U.S. law, corporate organization, foreign exchange, joint ventures, withdrawal from foreign ventures, and third-country manufacturing. Prerequisite: ADMN 562.

DMN 575(F) U.S. BUSINESS AND THE WORLD ECONOMY (3-0-3)

Survey of the economic, political, and social forces shaping the global economic environment in which firms operate. Includes a comparison of industrial systems, management practices, and public policies supporting business in the U.S., the European Community, and Japan. Prerequisites: graduate standing and permission of instructor.

DMN 578(S) INTERNATIONAL TRADE AND COMPETITIVENESS (3-0-3)

Overview of the economic and political environment of international trade and competitiveness. Includes the challenges unique to the management of a multinational corporation. Prerequisite: graduate standing or permission of instructor.

DMN 580(S) CUSTOMER ANALYSIS (3-0-3)

Introduction to major concepts in the analysis of consumer behavior, with emphasis on managerial applications. Includes both individual and organizational buying behavior as well as the analysis of consumption and post-purchase aspects. Open only to second-year M.B.A. students. Prerequisite: ADMN 581.

DMN 581(F) MARKETING MANAGEMENT (3-0-3)

Introduction to the key concepts underlying the function of marketing in a business enterprise. Includes lectures and an extensive analysis of marketing management cases, providing a foundation for advanced course work in marketing. Required for M.B.A. Prerequisites: graduate standing and permission of school.

DMN 582(S) BUSINESS MARKETING (3-0-3)

Study of the marketing of goods and services to businesses and other organizations, with emphasis on the formulation and implementation of business-to-business marketing strategies. Includes the analysis of issues, problems, and opportunities characteristic of business marketing situations. Prerequisite: ADMN 581. Not offered every year.

DMN 583(F) MARKETING OF SERVICES (3-0-3)

Exploration of challenges in the marketing of services, with emphasis on service quality, the importance of cross-functional intersections, and sources of competitive advantage. Includes the differences between marketing services and marketing products, service quality, customer satisfaction, the design of services, and service guarantees, using lectures, discussions, and case analyses. Prerequisite: ADMN 581.

DMN 584(S) PRODUCT MANAGEMENT (3-0-3)

Application of various dimensions of marketing strategy and management to the role of the product manager responsible for all marketing activities of a given product. Prerequisite: ADMN 581.

DMN 585(F) MARKETING RESEARCH (3-0-3)

Examination of selected marketing research techniques and methods used in solving marketing problems. Includes applied research projects to explore the implementation of methods in real-life settings. Prerequisite: ADMN 581.

ADMN 586(S) FUNDAMENTALS OF MARKETING RESEARCH (3-0-3)

Comprehensive look at the marketing research process from the perspective of a marketing manager. Includes the design and implementation of a wide range of research programs including gathering, analyzing, and using information related to key marketing mix decisions. Prerequisite: ADMN 581.

ADMN 587(F) MARKETING STRATEGY (3-0-3)

Examination of the process of formulating and implementing a marketing strategy to attain organizational goals, with emphasis on market definition and segmentation, top-down versus bottom-up approaches to strategy formulation, positioning, implementation, evaluation, and control. Prerequisite: ADMN 581.

ADMN 588(S) PRICING STRATEGY (3-0-3)

Study of the managerial approach to pricing in a marketing plan, with emphasis on integrating the economics of profit maximization, psychological aspects of customer response to price, and the anticipation of competition. Includes lectures, discussions, and case analyses. A solid understanding of basic quantitative methods required. Prerequisites: ADMN 532 and 581. Not offered every year.

ADMN 589(F) DECISION MODELS IN MARKETING (3-0-3)

Survey of quantitative decision models in marketing, with emphasis on the use of analytical approaches and computer-based models to formulate and solve managerial problems in marketing. Includes consumer choice, new product decisions, advertising response and budgeting decisions, pricing decisions, and sales force design decisions. A solid understanding of basic quantitative methods required. Prerequisites: ADMN 532 and 581. Not offered every year.

ADMN 591(F) STRATEGY AND OPERATIONS I (3-0-3)

Examination of principles and practices of leadership, strategic management, and operational management in private and public organizations functioning in a global context. Required for M.B.A. Prerequisite: ACCO 521.

ADMN 592(S) STRATEGY AND OPERATIONS II (3-0-3)

Continuation of ADMN 591, with emphasis on field projects involving companies and other organizations. Required for M.B.A.

ADMN 593(F) TOPICS IN MANAGEMENT I (3-0-3)

Study of selected topics in management. Includes Section 1, Production and Operations Management, and Section 2, Management of Innovation and Technology. Prerequisite: permission of instructor.

ADMN 596(S) STRATEGIC PLANNING AND CREATIVITY (3-0-3)

Development of strategic planning skills to help business managers make better short- and long-run applied decisions. Includes the role of creativity in the planning process, the essential features of effective planning systems, and examples of excellent planning by a variety of actual companies and industries. Prerequisite: ADMN 591.

ADMN 597(F) INDEPENDENT STUDY (hours variable)**ADMN 598(S)**

Independent study or directed reading on an approved project under faculty supervision. Prerequisite: special permission.

Ancient Mediterranean Civilizations (AMC)

The School of Humanities

AMC 200(F) ORIGINS OF WESTERN CIVILIZATIONS: ATHENS, ROME, AND JERUSALEM (3-0-3)

Interdisciplinary introduction to the great cultural traditions of ancient Near Eastern and Mediterranean society. Required for majors in Ancient Mediterranean Civilizations. *Instructor: Maas*

Anthropology (ANTH)

The School of Social Sciences

ANTH 200 INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to concepts and terminology in the scientific study of language. Includes sound systems (phonology), construction of words (morphology), organization of words in the sentence (syntax), meaning (semantics), and information flow (pragmatics), as well as a survey of interdisciplinary uses of linguistics such as historical linguistics (archaeology), dialectology (sociology), and language acquisition (psychology, cognitive sciences, and language teaching). Also offered as LING 200. *Instructors: Achard, Gildea*

ANTH 201(F) INTRODUCTION TO SOCIAL/CULTURAL ANTHROPOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to the history, methods, and concepts of social/cultural anthropology, which is devoted to the systematic description and understanding of cultural diversity in human societies. *Instructor: Georges*

ANTH 203(F) INTRODUCTION TO PHYSICAL ANTHROPOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to, and overview of, physical anthropology. Includes basic principles of genetic inheritance, human variation and adaptability, primate behavior, evolution, and the evolutionary history of primates and hominids. *Instructor: S. McIntosh*

ANTH 205(F) INTRODUCTION TO ARCHAEOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to the principles and methods of archaeology, with emphasis on elementary concepts explored through a series of case studies. *Instructors: R. McIntosh, S. McIntosh*

ANTH 206(S) INTRODUCTION TO WORLD PREHISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of the world's past cultures, with emphasis on major archaeological discoveries from Olduvai Gorge to Pompeii. Prerequisite: ANTH 205. Not offered 1997-98. *Instructors: R. McIntosh, S. McIntosh*

ANTH 220(S) CONTEMPORARY CHINESE CULTURE (3-0-3)

DISTRIBUTION COURSE: GROUP II

An examination of how global forces are transforming contemporary Chinese culture, with special attention to popular culture, media, and the debates over Chinese identity. Also offered as HIST 220. *Instructors: Lee, Smith*

ANTH 299(S) CONTEMPORARY CULTURE AND GLOBAL TRANSFORMATION (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Intended as a basic introduction to international studies and processes of fundamental social and cultural changes in the contemporary world. Using multidisciplinary approaches, the course surveys change in cultural regions such as China, South Asia, Latin America, Europe, and the U.S. through comparative focus on selected topics. These include debates about human rights in each area, the development of new media, and the analysis of changing tastes in popular culture.

Instructor: Lee

ANTH 300(S) LINGUISTIC ANALYSIS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Language as an object of scientific analysis, focused on how different languages organize semantic and pragmatic information into simple sentences. Topics: morphology, syntactic categories and constituency, propositional semantics, tense-aspect-modality, pragmatic information status, grammatical relations, and voice systems. Prerequisite: LING 200 or permission of instructor. Also offered as LING 300. *Instructor: Gildea*

ANTH 301(F) PHONETICS AND PHONOLOGY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Introductory study of sound and sound systems in the world's languages. Includes the anatomy and physiology of the speech mechanism with a survey of all linguistic sounds it is known to produce as well as organized patterns of speech sounds found cross-linguistically and three types of theories modeling these patterns: phonemic, feature-based (e.g., classical generative phonology), and autosegmental. Required for linguistics majors. Prerequisite: LING 200 or permission of instructor. Also offered as LING 301. *Instructor: Gildea*

ANTH 304(F) CORE CONCEPTS IN ANTHROPOLOGY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

This course critically reviews a set of concepts that have played a major role in shaping anthropology as a distinctive field of enquiry. Historically central concepts, such as culture and evolution, will be examined to illustrate the various ways in which anthropologists have sought to locate, evaluate, and know the "other." Special attention will be paid to the distinctive historical coloring of both the themes and outcomes of anthropological research. Strongly recommended for department majors. *Instructors: Faubion, S. McIntosh*

ANTH 305(F) HISTORICAL LINGUISTICS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of the nature of language change in its phonological, morphological, syntactic, semantic, and sociocultural aspects, using the perspective of language acquisition. Includes techniques of internal and comparative reconstruction of proto-languages. Required for linguistics majors; may substitute LING 315. Prerequisites: LING 200, 300, or 301 or permission of instructor. Also offered as LING 305. *Instructor: Copeland*

ANTH 306 HISTORY OF ANTHROPOLOGICAL IDEAS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Introduction to the history of anthropology, its theories, and its methods, with emphasis on social and cultural anthropology. Not offered 1997-98. *Instructor: Faubion*

ANTH 307(S) ANTHROPOLOGICAL DIRECTIONS, FROM THE SECOND WORLD WAR TO THE PRESENT (3-0-3)**DISTRIBUTION COURSE: GROUP II**

A sequel to ANTH 306/506, this course explores turns and trends in sociocultural research and critique during the past half-century. Special attention is paid to the rise and fall of structuralism, the problematization of "the primitive," and the proliferation of theories of "practice." *Instructor: Faubion*

ANTH 308(S) HISTORY AS A CULTURAL MYTH (3-0-3)

DISTRIBUTION COURSE: GROUP II

Ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as a statement of cultural values, as well as conceptualizations of cause, change, time, and reality. Also offered as WGST 336. *Instructor: Taylor*

ANTH 309(S) GLOBAL CULTURES (3-0-3)

DISTRIBUTION COURSE: GROUP II

This course will examine specific cultural debates and issues that have "overflowed" national boundaries. Topics will include student movements, democracy and citizenship, and the internationalization of professional and popular culture. *Instructor: Lee*

ANTH 312(F) AFRICAN PREHISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Thematic coverage of developments throughout the African continent from the Lower Paleolithic to medieval times, with emphasis on food production, metallurgy, and the rise of cities and complex societies. Not offered 1997-98. *Instructor: R. McIntosh*

ANTH 313(F) LANGUAGE AND CULTURE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Investigates the relation between language and thought, language and worldview, and language and logic. Also offered as LING 313. *Instructor: Tyler*

ANTH 317(S) CULTURAL THEORY AND ANTHROPOLOGICAL RESEARCH (3-0-3)

DISTRIBUTION COURSE: GROUP II

A critical survey of the sources and senses of the working vocabulary of contemporary social and cultural anthropology. Special attention is paid to the strengths and shortcomings of the anthropological habit of borrowing concepts and diagnostic categories from other fields. Strongly recommended for majors and for others interested in advanced course work in the departments. Not offered 1997-98. *Instructor: Faubion*

ANTH 319(S) SYMBOLISM AND POWER (3-0-3)

DISTRIBUTION COURSE: GROUP II

This course will use both traditional and contemporary readings to emphasize the trend in cultural analysis from a view of culture as monolithic and static to perceptions that any culture is internally varied and contradictory as well as changing and complex. Not offered 1997-98. *Instructor: Taylor*

ANTH 320(F) PUBLIC SPHERES AND PUBLIC CULTURES (3-0-3)

DISTRIBUTION COURSE: GROUP II

This course will discuss some of the basic issues surrounding civil society and the public sphere. It will look at specific contemporary debates in public culture, such as multiculturalism, identity politics, and the crisis of contemporary liberalism. Not offered 1997-98. *Instructor: Lee*

ANTH 322(S) CULTURES AND IDENTITIES (3-0-3)

DISTRIBUTION COURSE: GROUP II

How does culture shape who we think we are? This course will look at the production and destruction of identities through examining the "sources of the self" in historical and comparative frameworks. Not offered 1997-98. *Instructor: Lee*

ANTH 325(S) SEX, SELF, AND SOCIETY IN ANCIENT GREECE (3-0-3)

DISTRIBUTION COURSE: GROUP II

An introductory venture into conducting fieldwork in the past. The course treats a wide range of artifacts, from philosophical essays to vase paintings. It derives its focus from a rich corpus of recent research into the ancient problematization of desire and self-control. Also offered as WGST 322. Not offered 1997-98. *Instructor: Faubion*

ANTH 326 THE ANTHROPOLOGY OF LAW (3-0-3)

DISTRIBUTION COURSE: GROUP II

Social conflict and methods of dispute management in Western and non-Western societies. Comparison of legal institutions in band, tribal, early state, and complex industrial societies. Not offered 1997-98.

ANTH 327(F) GENDER AND SYMBOLISM (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examinations of beliefs concerning men, women, and gender in different cultures, including the West, relating to issues of symbolism, power, and the distribution of cultural models. Also offered as WGST 350. *Instructor: Taylor*

ANTH 328(S) VIOLENCE, TERROR, AND SOCIAL TRAUMA (3-0-3)

This course addresses the central place of violence in our society and its relations with social and political terror in other cultures. Readings, film, and theater probe everyday violence as well as spectacular violent events of our times. Aftermath, including cross-generational trauma, will be explored. *Instructor: Taylor*

ANTH 330(F) TOPICS IN THE ANTHROPOLOGY OF EUROPE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the complexities and emerging problematization of the "criteria of belonging," whether to a family, a place, a nation, or Europe and European civilization as a whole. Not offered 1997-98. *Instructor: Faubion*

ANTH 332(S) CONTEMPORARY DEBATES ON CULTURE (3-0-3)

DISTRIBUTION COURSE: GROUP II

This course serves as a platform for the wide-ranging considerations of how culture has come to prominence as the major framework in which the most pressing social and political issues of the day are discussed in the West as well as globally. Class sessions will be developed around in-depth case studies as well as the occasional presentation by nationally and internationally prominent guest speakers. Not offered 1997-98. *Instructors: Lee, Marcus*

ANTH 335(S) ANTHROPOLOGY AS CULTURAL CRITIQUE (3-0-3)

DISTRIBUTION COURSE: GROUP II

The critical assessment and interpretation of Euroamerican social institutions and cultural forms have always been an integral part of anthropology's intellectual project. This course will explain the techniques, history, and achievements of such critique. It will also view the purpose in the context of a more general critical social thought in the West, especially the U.S. Not offered 1997-98. *Instructor: Marcus*

ANTH 336 THE ART OF ETHNOGRAPHY (3-0-3)

DISTRIBUTION COURSE: GROUP II

A seminar that explores the experience of doing fieldwork and the problems of transforming theory, field experience, and data into a written account. Emphasis is on reading fieldwork accounts and gaining ethnographic writing skills. Strongly recommended for majors but also for other interested students in the social sciences and humanities. Not offered 1997-98.

ANTH 338(S) READING POPULAR CULTURE (3-0-3)

DISTRIBUTION COURSE: GROUP II

The course examines a number of cases from popular genres—romance novels, television sitcoms, tourist sites, movies, and rock music—and submits them to a variety of theoretical approaches from disciplines such as anthropology, sociology, literary studies, and philosophy. *Instructor: Milu*

ANTH 341 ETHNOGRAPHIC FILM AND THE 20TH CENTURY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

This course focuses on visual media of documentation and description in anthropology, especially on the historical and contemporary relationships between ethnographic film and writing. In addition, the course will place the development of ethnographic film in the context of documentary and narrative film as well as other media, such as television and video. During the course, students will be able to view several exemplars of ethnographic film and other media. Ethnography is the heart of cultural anthropology—both fundamental and representative of it. Film and media are this form's future, which makes it touch on experiences common to most students, thus defining its accessibility. Not offered 1997-98. *Instructor: Marcus*

ANTH 342 POLITICAL CINEMA (3-0-3)**DISTRIBUTION COURSE: GROUP II**

This course concerns the study of films whose rhetoric and commentary are explicitly political—as opposed to the dominant film trend, which is to hide political tendentiousness. We will look at various traditions of political filmmaking, including early Soviet film; German and American films of the 1930s and 1940s; Western European films that challenged the communist state; leftist cinema from Italy, France, and England; current work by minority and feminist filmmakers in the U.S.; and emergent cinema of countries such as Brazil and Senegal. Not offered 1997-98.

Instructor: Milun

ANTH 343(S) 20TH-CENTURY RELIGIOUS MOVEMENTS IN AFRICA (3-0-3)

Study of the religious, sociological, and political factors leading to the rise of religious movements in Africa, as well as missionary and colonial reactions to them. Includes the movements' relationship to indigenous religions, political praxis, and the focus on "this-worldly" salvation in light of political and economic marginality. Prerequisite: permission of instructor. Also offered as RELI 342. Not offered 1997-98. *Instructor: Bongmba*

ANTH 344(S) CITY/CULTURE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

The course treats both the theorization and the ethnographic exploration of the urban imaginary; urban spaces and practices; urban, suburban, and post-urban planning; city-states, colonial cities, and capital cities; and the late 20th-century metropolis. *Instructor: Faubion*

ANTH 346(F) MODERN ETHNOGRAPHY AND THE ETHNOGRAPHY OF MODERNITY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

This course explores the strategies of representation, the methodologies, and the diagnostic categories to which anthropologists have resorted in coming to terms with such phenomena as rationalization, economic and informational globalization, and the commodification of culture.

Instructor: Faubion

ANTH 347(F) THE U.S. AS A FOREIGN COUNTRY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

The course looks at selected aspects of American culture and society from an anthropological point of view. Readings derive from the works of both foreign and native observers, past and present. In 1997-98, special attention will be given to the fluidity of U.S. boundaries between public and private. *Instructor: Faubion*

ANTH 350 INDIANS OF THE AMERICAS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examines the cultures of Native American peoples throughout the New World. Both pre- and post-contact cultural patterns will be discussed with an emphasis on native and European reactions and responses. Offered occasionally.

ANTH 351(S) CULTURES OF NATIONALISM (3-0-3)

DISTRIBUTION COURSE: GROUP II

This course will examine the cultural dimensions of nationalism, particularly around the creation of forms of "peoplehood" that seem to be presupposed by almost all nation-building projects. Texts to be analyzed will include the Declaration of Independence, the U.S. Constitution, and the Declaration of the Rights of Man. Not offered 1997-98. *Instructor: Lee*

ANTH 353(S) CULTURES OF INDIA (3-0-3)

DISTRIBUTION COURSE: GROUP II

Summary of the prehistory, ethnography, and ethnology of the Indian subcontinent, with emphasis on Hinduism, Buddhism, and Indian philosophy. *Instructor: Tyler*

ANTH 356 ETHNOGRAPHY OF TRIBAL PEOPLE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Some "people," e.g., the Nuer, the Samoans, the Australian aborigines, the Hopi, and the Navajo have been studied by anthropologists for decades and, in a few cases, almost a century. This course will review the studies for a particular people, discussing change and permanence in their anthropological description and other related issues. Offered occasionally.

ANTH 358(F) THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLES (3-0-3)

DISTRIBUTION COURSE: GROUP II

In contrast with people self-identified within political structures of the First, Second, and Third Worlds, Fourth World peoples are, generally speaking, "stateless peoples." In this course, we will examine both how this "unofficial" status affects their struggle for self-determination and how native peoples engage traditional beliefs and practices for self-empowerment. Through readings, films, and speakers, we will examine current conflicts facing indigenous peoples in North and South America, the Soviet Union, Europe, Asia, and Australia. *Instructor: Milun*

ANTH 360 MODERNITY AND SOCIAL SPACE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Modernity can be usefully described as the transmutation of time and space. In this course, we will focus on specific changes in the production of social space. How, for example, is global space produced—legally in international law, economically by multinational corporations, and culturally through satellite communications systems? While changes in the public space of urban/suburban America tell us something about the values of those who produce such space, they also tell us about the cultural and political consciousness/unconsciousness of those who use it. Theories from a variety of disciplines will be mobilized to help us understand these changes in social space. Not offered 1997-98. *Instructor: Milun*

ANTH 361 LATIN AMERICAN TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Focus on the widely shared socioeconomic, political, and cultural themes as seen over history and in current events. Not offered 1997-98.

ANTH 362(S) ARCHAEOLOGICAL FIELD TECHNIQUES (3-0-3)

DISTRIBUTION COURSE: GROUP II

Methods used in fieldwork, laboratory analysis, and interpretation of archaeological data from local site excavated by the class. Prerequisite: ANTH 205. *Instructor: R. McIntosh*

ANTH 363(F) EARLY CIVILIZATIONS (3-0-3)

DISTRIBUTION COURSE: GROUP II

A comparative study of the civilizations of Mesopotamia, Egypt, the Indus, China, and the Maya emphasizing the causes and conditions of their origins. Not offered 1997-98. *Instructor: R. McIntosh*

ANTH 368 PRIMATOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

An introduction to primate diversity, ecology, and sociality, based on what is now known from field studies of wild primate populations. Not offered every year.

ANTH 370 RADICAL EUROPE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Emerging formations of radicalism in Europe will be explored through ethnographic and cinematic materials. Readings on the rise of nationalism, racism, and neofascism will be covered. Interviews with western European political leaders conducted by the instructor will be used to probe the cultural fears and aspirations in forming the politics of the extreme Right. Not offered every year.

ANTH 373(F) THE LINGUISTIC TURN: LANGUAGE AND SUBJECTIVITY (3-0-3)

This course will look at the role language plays in the construction of individual and collective forms of subjectivity. It will draw from a variety of sources, including literature, philosophy, anthropology, and linguistics, and will look at specific problems such as the narrative construction of personal and national identity and “performative” approaches to gender. Classes will consist of intensive discussions of a target article or paper, and the grade will depend on short, biweekly papers. *Instructor: Lee*

ANTH 377(F) THE ANCIENT CITY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Compare the historian’s and social scientist’s approaches to the emerging preindustrial city. Cities are the products of an interaction of physical and social environments and their histories may reflect their enormous symbolic weight. We use the comparative method to explore general principles of development lurking behind the different faces of ancient urbanism. Also listed as HIST 377. *Instructors: Maas, R. McIntosh*

ANTH 381(S) MEDICAL ANTHROPOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Cultural, ecological, and biological perspectives on human health and disease throughout the world. *Instructor: Georges*

ANTH 383 HUMAN ADAPTATION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Explanations for the range and patterns of human biological differences in the context of theories of adaptation. Integrates themes from human genetics, physiology, and cultural studies. Not offered 1997-98.

ANTH 386 HUMAN NUTRITION (3-0-3)

DISTRIBUTION COURSE: GROUP II

The anthropology of eating: nutrient requirements; assessment of nutritional status; food selection; symbolic, psychological, and cultural aspects of food and food consumption. Not offered 1997-98.

ANTH 388(F) THE LIFE CYCLE: A BIOCULTURAL VIEW (3-0-3)

DISTRIBUTION COURSE: GROUP II

The human life cycle from conception to death. Focus is on the interaction between biological processes and culture. Also offered as WGST 335. *Instructor: Georges*

ANTH 390(F) CULTURE, NARRATION, AND SUBJECTIVITY (3-0-3)

DISTRIBUTION COURSE: GROUP II

This course examines how linguistic and narrative structures interact to produce specific cultures of interpretation. The focus will be on linguistic and literary representations of subjectivity. This course will use novels by Western authors, such as Virginia Woolf and Dostoevsky, and some Chinese materials as comparison. Not offered 1997-98. *Instructor: Lee*

ANTH 395(F) CULTURE AND COMMUNICATION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Investigates the relations between different forms of communication—speech, print, film, and cultural constructions such as audiences, publics, and communities. *Instructor: Lee*

ANTH 402(S) SYNTAX AND SEMANTICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of semantic categories and their formal expression in morphological, syntactic, and lexical units and patterns. Also offered as LING 402. *Instructor: Davis*

ANTH 403(F) ANALYZING PRACTICE (3-0-3)

A critical review of work informed by what has sometimes been deemed the "key concept" of anthropological theory and research since the 1960s. Special attention will be devoted to the analytics of practice developed by Foucault, Bourdieu, and de Certeau. Not offered 1997-98. *Instructor: Faubion*

ANTH 404 INDEPENDENT STUDY (3-0-3)

Directed reading and preparation of written papers on anthropological subjects not offered in the curriculum or advanced study of subjects on which courses are offered.

ANTH 406(S) COGNITIVE STUDIES IN ANTHROPOLOGY AND LINGUISTICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Relations between thought, language, and culture. Special emphasis given to natural systems of classification and their underlying logical principles. Also offered as LING 406. Not offered 1997-98. *Instructor: Tyler*

ANTH 407(F) FIELD TECHNIQUES AND ANALYSIS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of techniques and practice in the observation, analysis, and recording of a human language. Includes discussion of ethical issues in working with indigenous peoples. Limited enrollment. LING 300, 301, and 402 recommended. Prerequisite: permission of instructor. Also offered as LING 407. *Instructor: Kemmer*

ANTH 408(S) FIELD TECHNIQUES AND ANALYSIS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Continuation of ANTH 407/LING 407. Prerequisite: permission of instructor. Also offered as LING 408. *Instructor: Kemmer*

ANTH 410 THE ETHNOGRAPHY OF DEVELOPMENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

This course suggests the necessity of a solid ethnographic grounding for both practical development work and for further intellectual growth of the discipline. Not offered every year.

ANTH 411(S) NEUROLINGUISTICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of language and the brain. Includes the organization of the brain (e.g., the localization of speech, language, and memory functions), hemispheric dominance, and the pathologies of speech and language associated with brain damage. Also offered as LING 411. Not offered 1997-98. *Instructor: Lamb*

ANTH 412(S) RHETORIC (3-0-3)

DISTRIBUTION COURSE: GROUP II

Overview of classical theories of rhetoric. Includes intensive discussion of contemporary theories and applications in a wide variety of disciplines. Also offered as LING 410. *Instructor: Tyler*

ANTH 414(F) HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Application of linguistic theory and method in the analysis of cultural materials. Includes discourse analysis and the structure and interpretation of texts and conversation. Also offered as LING 414. Not offered 1997-98. *Instructor: Tyler*

ANTH 415(F) THEORIES IN MODERNITY/POSTMODERNITY I (3-0-3) **DISTRIBUTION COURSE: GROUP II**

An advanced course for graduate students and undergraduate majors with interests in the interdisciplinary field of cultural studies. Readings in the work of Saussure, Gadamer, Derrida, Bakhtin, Foucault, and others. Several papers are required that emphasize the application of ideas to cultural analysis of contemporary life. Also offered as WGST 433. *Instructor: Milun*

ANTH 416(S) THEORIES IN MODERNITY/POSTMODERNITY II (3-0-3) **DISTRIBUTION COURSE: GROUP II**

Part one focuses on the relation between critical theory and poststructuralism. Readings from Marx, Althusser, Adorno, and Habermas, cover basic concepts like ideology, reification, etc. Part two looks at new analytical categories of social analysis, such as the body, global culture, and space. etc. Not offered 1997-98. *Instructor: Milun*

ANTH 419(S) LAW AND SOCIETY (3-0-3)

In addition to focusing on works associated with critical legal studies and antecedent legal realism, this course will examine a number of cases in the international domain that challenge concepts of civil society arising with the modern nation-state. *Instructor: Milun*

ANTH 423(F) AFRICAN MYTHS AND RITUAL (3-0-3) **DISTRIBUTION COURSE: GROUP I**

Explore and analyze specific myths and rituals that provide legitimation for community ceremonies and that serve as a basis for the negotiation of power and ideology for members within that community. Readings from classic theorists: Gennep and Turner; and contemporary theorists: Werbner, Heusch, Comaroff, and Ray. Also offered as RELI 423. *Instructor: Bongmba*

ANTH 425(F) ADVANCED TOPICS IN ARCHAEOLOGY (3-0-3)

Seminar on selected topics in archaeological analysis and theory. The course will variously focus on ceramic analysis and classification, archaeological sampling in regional survey and excavation, and statistical approaches to data analysis and presentation. Prerequisites: ANTH 205 and 362. *Instructor: S. McIntosh*

ANTH 430(F) EXPERIMENTAL WRITING AND ANTHROPOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Explores relationships between ethnography and other genres. Emphasizes experimental styles, including combinations of ethnographic and personal material, and problems of writing to communicate experiences of things like violence and art. *Instructor: Taylor*

ANTH 439(S) DOCUMENTARY AND ETHNOGRAPHIC FILM (3-0-3)

Overview of the history of documentary and ethnographic cinema from a worldwide perspective. Includes both canonical and alternative films and film movements, with emphasis on the shifting and overlapping boundaries of fiction and nonfiction genres. Also offered as HART 439. *Instructor: Naficy*

ANTH 440(F) NON-WESTERN CINEMA: THIRD WORLD CINEMAS (3-0-3)

Study of significant national cinemas, film movements, and filmmakers of the Third World from Africa to Latin America and from the Middle East to China. Includes colonial and postcolonial discourses. Limited enrollment. Also offered as HART 440. *Instructor: Naficy*

ANTH 446(S) ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY (3-0-3)

Seminar on contemporary research in the biomedical aspects of human health and disease. Includes topics from medical ecology and epidemiology. *Instructor: Georges*

ANTH 458(S) HUMAN OSTEOLOGY (3-0-3)

Introduction to the analysis of human skeletal material from archaeological sites. Not offered 1997-98. *Instructor: S. McIntosh*

ANTH 460(S) ADVANCED ARCHAEOLOGICAL THEORY (3-0-3)

History and analysis of the major currents of archaeological theory from the Encyclopaedist origins of positivism, through cultural evolutionism and historical particularism, to the New Archaeology and current trends. Prerequisite: ANTH 205. *Instructor: R. McIntosh*

ANTH 463(F) WEST AFRICAN PREHISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Seminar providing in-depth consideration of the later prehistoric archaeology (late Stone Age and Iron Age) of the West African subcontinent. Not offered 1997-98. *Instructor: S. McIntosh*

ANTH 468 PALAEOCLIMATE AND HUMAN RESPONSE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Palaeoscientists have records extending through the Holocene of forcing process, such as climate that influence humans. We examine these records and their impact on past and present society. We explore the concept of social memory, used to understand how past communities use information about climate change and past responses in long-term adaptive strategies. Not offered 1997-98

ANTH 470(S) PROPHETS, REFORMERS, REVOLUTIONARIES (3-0-3)

This course explores social and cultural movements and the figures by whom such movements are inspired and guided. Special topics to be treated include sectarianism and millennialism, intellectual vanguardism, and the "new" politics of identity and intersubjectivity. Not offered 1997-98

Instructor: Faubion

ANTH 471(S) CULTURE, MEDIA, SOCIETY: EXILE CINEMA (3-0-3)

Examination of cultural productions as vehicles for communication across national, cultural, and other boundaries, using contemporary theories of culture and media. Includes the creation of meaning and cultural capital, the representation of minority and alternative views, and the construction of individual and group identities. Also offered as HART 471. Not offered 1997-98

Instructor: Naficy

ANTH 474(S) ADVANCED SEMINAR ON THE PREHISTORIC LANDSCAPE (3-0-3)

DISTRIBUTION COURSE: GROUP II

The interaction of human geography (cultural ecology) and the physical landscape (geomorphology and physical geography) as applied to past and present settlement on major floodplains

Instructor: R. McIntosh

ANTH 490(F) DIRECTED HONORS RESEARCH (3-0-3 each semester)**ANTH 491(S)**

A two-semester sequence of independent research culminating in the preparation and defense of an honors thesis. Open only to candidates formally accepted into the honors program.

ANTH 503(F) INTRODUCTION TO PHYSICAL ANTHROPOLOGY (3-0-3)

Graduate version of ANTH 203.

ANTH 504(F) CORE CONCEPTS IN ANTHROPOLOGY (3-0-3)

Graduate version of ANTH 304.

ANTH 505(F) INTRODUCTION TO ARCHAEOLOGY (3-0-3)

Graduate version of ANTH 205.

ANTH 506 HISTORY OF ANTHROPOLOGICAL IDEAS (3-0-3)

Graduate version of ANTH 306.

ANTH 507(S) ANTHROPOLOGICAL DIRECTIONS, FROM THE SECOND WORLD WAR TO THE PRESENT (3-0-3)

Graduate version of ANTH 307.

ANTH 508(S) HISTORY AS A CULTURAL MYTH (3-0-3)

Graduate version of ANTH 308.

ANTH 509(S) GLOBAL CULTURES (3-0-3)

Graduate version of ANTH 309.

ANTH 512(F) AFRICAN PREHISTORY (3-0-3)

Graduate version of ANTH 312.

ANTH 513(F) LANGUAGE AND CULTURE (3-0-3)

Graduate version of ANTH 313.

ANTH 516(S) INTRODUCTION TO WORLD PREHISTORY (3-0-3)

Graduate version of ANTH 206.

ANTH 517(S) CULTURAL THEORY AND ANTHROPOLOGICAL RESEARCH (3-0-3)

Graduate version of ANTH 317.

ANTH 519(S) SYMBOLISM AND POWER (3-0-3)

Graduate version of ANTH 319.

ANTH 520(F) PUBLIC SPHERES AND PUBLIC CULTURES (3-0-3)

Graduate version of ANTH 320.

ANTH 522(S) CULTURES AND IDENTITIES (3-0-3)

Graduate version of ANTH 322.

ANTH 525(S) SEX, SELF, AND SOCIETY IN ANCIENT GREECE (3-0-3)

Graduate version of ANTH 325.

ANTH 527(F) GENDER AND SYMBOLISM (3-0-3)

Graduate version of ANTH 327.

ANTH 528(S) VIOLENCE, TERROR, AND SOCIAL TRAUMA (3-0-3)

Graduate version of ANTH 328.

ANTH 530(F) TOPICS IN THE ANTHROPOLOGY OF EUROPE (3-0-3)

Graduate version of ANTH 330.

ANTH 532(S) CONTEMPORARY DEBATES ON CULTURE (3-0-3)

Graduate version of ANTH 332.

ANTH 535(S) ANTHROPOLOGY AS CULTURAL CRITIQUE (3-0-3)

Graduate version of ANTH 335.

ANTH 536 THE ART OF ETHNOGRAPHY (3-0-3)

Graduate version of ANTH 336.

ANTH 538 READING POPULAR CULTURE (3-0-3)

Graduate version of ANTH 338.

ANTH 539(S) DOCUMENTARY AND ETHNOGRAPHIC FILM (3-0-3)

Graduate version of ANTH 439. Also offered as HART 539.

ANTH 540(F) NON-WESTERN CINEMA: THIRD WORLD CINEMAS (3-0-3)

Graduate version of ANTH 440. Also offered as HART 540.

ANTH 541 ETHNOGRAPHIC FILM AND THE 20TH CENTURY (3-0-3)

Graduate version of ANTH 341.

ANTH 542 POLITICAL CINEMA (3-0-3)

Graduate version of ANTH 342.

ANTH 544(S) CITY/CULTURE (3-0-3)

Graduate version of ANTH 344.

ANTH 546(F) MODERN ETHNOGRAPHY AND THE ETHNOGRAPHY OF MODERNITY (3-0-3)

Graduate version of ANTH 346.

ANTH 550 INDIANS OF THE AMERICAS (3-0-3)

Graduate version of ANTH 350.

ANTH 551(S) CULTURES OF NATIONALISM (3-0-3)

Graduate version of ANTH 351.

ANTH 553(S) CULTURES OF INDIA (3-0-3)

Graduate version of ANTH 353.

ANTH 556 ETHNOGRAPHY OF TRIBAL PEOPLE (3-0-3)

Graduate version of ANTH 356.

ANTH 558 THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLES (3-0-3)

Graduate version of ANTH 358.

ANTH 560 MODERNITY AND SOCIAL SPACE (3-0-3)

Graduate version of ANTH 360.

ANTH 561 LATIN AMERICAN TOPICS (3-0-3)

Graduate version of ANTH 361.

ANTH 562(S) ARCHAEOLOGICAL FIELD TECHNIQUES (3-0-3)

Graduate version of ANTH 362.

ANTH 563(F) EARLY CIVILIZATIONS (3-0-3)

Graduate version of ANTH 363.

ANTH 568 PRIMATOLOGY (3-0-3)

Graduate version of ANTH 368.

ANTH 570 RADICAL EUROPE (3-0-3)

Graduate version of ANTH 370.

ANTH 571(S) CULTURE, MEDIA, SOCIETY: EXILE CINEMA (3-0-3)

Graduate version of ANTH 471. Also offered as HART 571.

ANTH 573(F) THE LINGUISTIC TURN: LANGUAGE AND SUBJECTIVITY (3-0-3)

Graduate version of ANTH 373.

ANTH 577(F) THE ANCIENT CITY (3-0-3)

Graduate version of ANTH 377.

ANTH 581(S) MEDICAL ANTHROPOLOGY (3-0-3)

Graduate version of ANTH 381.

ANTH 583 HUMAN ADAPTATION (3-0-3)

Graduate version of ANTH 383.

ANTH 586 HUMAN NUTRITION (3-0-3)

Graduate version of ANTH 386.

ANTH 588(F) THE LIFE CYCLE: A BIOCULTURAL VIEW (3-0-3)

Graduate version of ANTH 388.

ANTH 590(F) CULTURE, NARRATION, AND SUBJECTIVITY (3-0-3)

Graduate version of ANTH 390.

ANTH 595(F) CULTURE AND COMMUNICATION (3-0-3)

Graduate version of ANTH 395.

ANTH 600 INDEPENDENT STUDY (3-0-3)

ANTH 601(S) GRADUATE PROSEMINAR IN ANTHROPOLOGY (3-0-3)

Mapping the current fields of anthropological discourses, examining the debates in and between each of these fields, and discussing how these debates are conducted in the domains of fieldwork, ethnographic writing, and in the construction of careers in anthropology. *Instructor: Marcus*

ANTH 603(F) ANALYZING PRACTICE (3-0-3)

Graduate version of ANTH 403.

ANTH 606(S) COGNITIVE STUDIES IN ANTHROPOLOGY AND LINGUISTICS (3-0-3)

Graduate version of ANTH 406.

ANTH 607(F) FIELD TECHNIQUES AND ANALYSIS (3-0-3)

Graduate version of ANTH 407.

ANTH 608(S) FIELD TECHNIQUES AND ANALYSIS (3-0-3)

Graduate version of ANTH 408.

ANTH 610 THE ETHNOGRAPHY OF DEVELOPMENT (3-0-3)

Graduate version of ANTH 410.

ANTH 611 NEUROLINGUISTICS (3-0-3)

Graduate version of ANTH 411.

ANTH 612(S) RHETORIC (3-0-3)

Graduate version of ANTH 412.

ANTH 614(F) HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY (3-0-3)

Graduate version of ANTH 414.

ANTH 615(F) THEORIES IN MODERNITY/POSTMODERNITY I (3-0-3)

Graduate version of ANTH 415.

ANTH 616(S) THEORIES IN MODERNITY/POSTMODERNITY II (3-0-3)
Graduate version of ANTH 416.

ANTH 619(S) LAW AND SOCIETY (3-0-3)
Graduate version of ANTH 419.

ANTH 625 ADVANCED TOPICS IN ARCHAEOLOGY (3-0-3)
Graduate version of ANTH 425.

**ANTH 630(F) EXPERIMENTAL WRITING AND
ANTHROPOLOGY (3-0-3)**
Graduate version of ANTH 430.

**ANTH 646(S) ADVANCED TOPICS IN BIOMEDICAL
ANTHROPOLOGY (3-0-3)**
Graduate version of ANTH 446.

ANTH 658(S) HUMAN OSTEOLOGY (3-0-3)
Graduate version of ANTH 458.

ANTH 660(S) ADVANCED ARCHAEOLOGICAL THEORY (3-0-3)
Graduate version of ANTH 460.

ANTH 663(F) WEST AFRICAN PREHISTORY (3-0-3)
Graduate version of ANTH 463.

ANTH 668(S) PALAEOCLIMATE AND HUMAN RESPONSE (3-0-3)
Graduate version of ANTH 468.

ANTH 670(S) PROPHETS, REFORMERS, REVOLUTIONARIES (3-0-3)
Graduate version of ANTH 470.

**ANTH 674(S) ADVANCED SEMINAR ON THE PREHISTORIC
LANDSCAPE (3-0-3)**
Graduate version of ANTH 474.

ANTH 800 RESEARCH AND THESIS (hours variable)

Arabic (ARAB)

The School of Humanities/Department of Linguistics

ARAB 101 ELEMENTARY ARABIC I (3-2-3)

No prior knowledge of Arabic required.

ARAB 102 ELEMENTARY ARABIC II (3-2-3)

Architecture (ARCH)

The School of Architecture

ARCH 101(F) PRINCIPLES OF ARCHITECTURE I (2-6-4)

Visual studies of restricted dimensions. Includes using simple tools and materials to develop an awareness of the environment. Required for architecture majors. *Instructors: Grenader, Samuels*

ARCH 102(S) PRINCIPLES OF ARCHITECTURE I (2-6-4)

Introduction to concepts of beginning architectural design. Includes the manipulation of visual structure for formal and operational information and the design process as problem solving, with emphasis on conscious method. Required for architecture majors. Prerequisite: ARCH 101. *Instructors: Appel, Samuels*

ARCH 132 CHANGING PERSPECTIVES OF ARCHITECTURE (2-0-2)

Introductory tutorial. Includes readings, field trips, and the observation of current events and public affairs, with emphasis on values, institutions, and environmental changes relating to the future role and practice of architecture.

ARCH 134(S) INTRODUCTION TO ARCHITECTURAL THEORY (2-0-2)

Introduction to the major texts and theories of architecture, conducted as an adjunct to the freshman design studio. Open to nonmajors by permission of instructor.

ARCH 201(F) PRINCIPLES OF ARCHITECTURE II (3-9-6)

Elaboration of architectural concepts applied to building design in the urban context. Includes introductory urban planning issues. Required for architecture majors. Prerequisites: ARCH 101 and 102. *Instructors: Gamard, Roy*

ARCH 202(S) PRINCIPLES OF ARCHITECTURE II (3-9-6)

Study of intermediate-level design problems, with emphasis on building technology, programming, and formal design. Required for architecture majors. Prerequisites: ARCH 101, 102, and 201. *Instructors: Brown, Wittenberg*

ARCH 213(F) STRUCTURAL AND CONSTRUCTION SYSTEMS I (3-0-3)

Introduction to the characteristics of structural and construction systems in architectural technology. Includes lab experiments combined with lectures on systems, methods, and their historical development. *Instructors: Colaco, Ford*

ARCH 214(S) STRUCTURAL AND CONSTRUCTION SYSTEMS II (3-0-3)

Application of materials and construction (e.g., wood, masonry, concrete, and steel). Includes case studies and field trips. *Instructors: Colaco, Ford*

ARCH 301(F) PRINCIPLES OF ARCHITECTURE III (2-12-6)

Complex building design program, with emphasis on the development of the architectural concept into detail design. Required for architecture majors. Prerequisites: ARCH 101, 102, 201, and 202. *Instructors: Brown, DeLaura*

ARCH 302(S) SELECTED ARCHITECTURAL PROBLEMS I (2-12-6)

Study of various intermediate-level problems, with emphasis on developing comprehensive experience in design methods and processes. Required for preprofessional major in architecture.

Prerequisites: ARCH 201, 202, and 301. *Instructors: Bell, Cannady, Parsons*

ARCH 308(S) ARCHITECTURE FOR NONARCHITECTS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of architectural issues through site visits and comparative building studies, encounter with guest architects, study of design problems, lectures, readings, and discussion. Includes the impact of architecture on its users and its relation to the institutions that produce it. Prerequisite: permission of instructor. *Instructor: Casbarian*

ARCH 311(F) HOUSTON ARCHITECTURE (3-0-3)

Series of illustrated lectures and walking tours that describe and analyze the architecture of Houston from the city's founding in 1836 to the present. *Instructor: Fox*

ARCH 315(F) STRUCTURAL AND CONSTRUCTION SYSTEMS III (3-0-3)

Application of principles of analysis to the construction of steel- and concrete-framed structures. Continuation of ARCH 213 and 214. Prerequisites: ARCH 213 and 214. *Instructors: Colaco, Ford*

ARCH 316(S) BUILDING CLIMATOLOGY (3-0-3)

Introduction to the thermal performance of buildings. Includes Part 1, Building Climatology, and Part 2, Air Conditioning Systems. *Instructor: Wittenberg*

ARCH 325(F) THEORY AND MODERNISM (3-0-3)

Part 1, study of the "early moderns," including Durand, Laugier, Ledoux, Boullée, and Blondel. Part 2, brief introduction to the concept of modernity in the history of Western thought. Part 3, examination of the formulation and use of "modernism" as a consistent and rigorous term. Part 4, readings from canonical texts and buildings of "modern architecture." *Instructor: Gamard*

ARCH 343(S) CITIES AND HISTORY (3-0-3)

Historical survey of the city from Sumer to the baroque capitals. *Instructor: Ingersoll*

ARCH 344(S) CONSTRUCTION AND DESIGN (3-0-3)

Seminar on normative relationships between the construction and aesthetics of an object, with emphasis on the idea that how things are made can be one credible point of departure for the architectural design process.

ARCH 345(F) NATURAL ENVIRONMENT FACTORS (3-0-3)

Overview of issues concerning natural resource consumption and environmental impact pertinent to urban design activities. *Instructor: Blackburn*

ARCH 346(S) 19TH- AND 20TH-CENTURY ARCHITECTURAL HISTORY (3-0-3)

Survey of the history and theories of modern architecture. Also offered as HART 346. *Instructor: Gamard*

ARCH 353(F) PHOTOGRAPHY FOR ARCHITECTS (3-0-3)

Exploration of a variety of photographic techniques for architectural research, design, and presentation. Limited enrollment. *Instructor: White*

ARCH 401(F) PRINCIPLES OF ARCHITECTURE IV (2-12-6)

Study of upper-level architectural design problems, with emphasis on urban design principles and methodology. Includes the effects of social and political forces on planning and building organization. Required for preprofessional major in architecture. Prerequisites: ARCH 101, 102, 201, 202, 301, and 302. *Instructor: Wamble*

ARCH 402(S) SELECTED ARCHITECTURAL PROBLEMS II (2-12-6)

See ARCH 302. Required for professional major in architecture. Prerequisites: ARCH 101, 102, 201, 202, 301, 302, and 401. *Instructors: Bell, Cannady, Parsons*

ARCH 412(S) ADVANCED DESIGN OF STRUCTURAL SYSTEMS (3-0-3)
 Studies in advanced structural design. Includes buildings, floor systems, building systems, façade treatments, long span structures, pneumatic and cable structures, and new structural systems and materials, as well as case studies. Prerequisites: ARCH 213, 214, and 315 (or equivalent). *Instructors: Colaco, Ford*

ARCH 414(S) HOUSTON RESEARCH PROJECT (3-0-3)
 Thorough examination of the work of a single architect, identifying and exploring cultural issues. *Instructor: Fox*

ARCH 418(F) LE CORBUSIER/MODERN ARCHITECTURE (3-0-3)
 Examination of the fundamental issues of modernism in architecture emerging from both European and American sources. Includes a systematic analysis of the works and writings of major 20th-century architects. *Instructor: Ingersoll*

ARCH 420 HISTORY OF BUILDING TECHNOLOGY (3-0-3)
 Survey of the history of building technology from ancient times to the present. Includes theory, methods, and practical applications. *Instructor: Wittenberg*

ARCH 422(F) INTRODUCTION TO COMPUTER GRAPHICS (3-0-3)
 Introduction to computing in architecture, with emphasis on developing core skills to serve students using the computer facilities in the School of Architecture.

ARCH 423 PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE (3-0-3)
 Introductory survey of professional practice in architecture. *Instructors: Fleishacker, Furr*

ARCH 434(S) INTRODUCTION TO COMPUTER-AIDED DESIGN (3-0-3)

ARCH 435(F) INTRODUCTION TO COMPUTER PROJECTS IN ARCHITECTURE (3-0-3)
 Continuation of ARCH 434, with emphasis on use of advanced software. *Instructor: DeLaura*

ARCH 436(S) COMPUTER-AIDED DESIGN (3-0-3)
 Exploration of advanced computer graphic techniques using CAD in architecture as a design and presentation medium. *Instructor: DeLaura*

ARCH 440(S) ADVANCED COMPUTER MODELING AND RENDERING (3-0-3)
 Advanced study of computer modeling, rendering, and graphics manipulation, with emphasis on their role in the design process.

ARCH 455(F) HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY (3-0-3)
 Exploration of current issues in the formulation and implementation of housing and urban development programs in the U.S. An oral presentation and written paper on a specific topic within general policy area required. *Instructor: Lord*

ARCH 461 SPECIAL PROJECTS (hours variable)
 Independent research or design arranged in consultation with a faculty member subject to approval of faculty adviser and director. Very limited enrollment. *Instructor: Casbarian*

ARCH 500 PRECEPTORSHIP PROGRAM (0-0-15)
 Full-time internship for 9 to 12 months under the guidance of an appointed preceptor. Required for all recipients of Rice B.A. degrees in preprofessional or area majors who seek admission to graduate studies in architecture. *Instructor: Casbarian*

ARCH 501(F) GRADUATE COURSE STUDIO I (5-15-10)

Lectures, seminars, labs, and design studio projects adjusted to individual needs. Required for students with nonarchitectural bachelor's degrees who seek admission to graduate professional programs in architecture or urban design. Prerequisite: determined by the Graduate Affairs Committee with the School of Architecture. *Instructors: Bell, Whitehead*

ARCH 502(S) GRADUATE COURSE STUDIO II (5-15-10)

See ARCH 501. *Instructors: Aldrich, Pope*

ARCH 503(F) GRADUATE COURSE STUDIO III (5-15-10)

Preparatory design studio to follow ARCH 501 and 502. For students entering studios the following semester in regular graduate programs in architecture and urban design. *Instructor: Parsons, Wittenberg*

ARCH 504(S) GRADUATE COURSE STUDIO IV (5-15-10)

See ARCH 503.

ARCH 514(S) BUILDING TECHNOLOGY AND STRUCTURES II (3-0-3)

Study of structure in architecture, forces and equilibrium, structural materials, and the behavior analysis, and design of structural elements and their connections. Required for students in the qualifying graduate program. *Instructors: Colaco, Ford*

ARCH 515(F) BUILDING TECHNOLOGY AND STRUCTURES III (3-0-3)

Study of the behavior, analysis, and design of structural elements, the synthesis of structural elements into structural systems, and the integration of structural systems with other building systems. Required for students in the qualifying graduate program. Prerequisite: ARCH 514. *Instructors: Colaco, Ford*

ARCH 516(S) BUILDING CLIMATOLOGY (3-0-3)

Graduate version of ARCH 316.

ARCH 541(F) ISSUES IN CONTEMPORARY**ARCH 542(S) ARCHITECTURE (3-0-3 each semester)**

Survey of the development, reappraisal, and transformation of architectural ideals in the period since 1945. *Instructor: Pope*

ARCH 600 QUALIFYING GRADUATE PRACTICAL INTERNSHIP (hours variable)

Practical work experience for students who have completed at least four semesters in the qualifying graduate program before entering the regular M.Arch. studio sequence. Very limited enrollment. Prerequisite: permission of instructor.

ARCH 601(F) ARCHITECTURAL PROBLEMS: STUDIO (5-15-10)

Exploration of abstract thought and design capabilities relevant to the systematic processes of designing specific buildings and facilities. *Instructors: Cannady (section 1); Casbarian (section 2); Krumwiede, Nickey, Lerup (section 3)*

ARCH 602(S) ARCHITECTURAL PROBLEMS: STUDIO (5-15-10)

See ARCH 601. *Instructors: Wamble (section 1); Roy (section 2)*

ARCH 609(S) ARCHITECTURE FOR NONARCHITECTS (3-0-3)

Classroom teaching under the supervision of the instructor. For elective credit only. *Instructor: Casbarian*

ARCH 611(F) HOUSTON ARCHITECTURE (3-0-3)

Graduate version of ARCH 311.

ARCH 612(S) ADVANCED DESIGN OF STRUCTURAL SYSTEMS (3-0-3)

Graduate version of ARCH 412.

ARCH 614(S) HOUSTON RESEARCH PROJECT (3-0-3)

Graduate version of ARCH 414.

ARCH 618(F) LE CORBUSIER/MODERN ARCHITECTURE (3-0-3)

Graduate version of ARCH 418.

ARCH 618(S) WRITING IN THE MARGINS OF ARCHITECTURE (3-0-3)

Seminar on contemporary theory in literature, psychology, and feminist criticism that implicates the practice of architecture, with emphasis on whether architecture should aspire to conditions of poststructuralist thought or does it confound contemporary theory. Includes recent projects used as case studies. *Instructor: Wamble*

ARCH 620 HISTORY OF BUILDING TECHNOLOGY (3-0-3)

Graduate version of ARCH 420.

ARCH 623 PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE (3-0-3)

Graduate version of ARCH 423.

ARCH 625(F) THEORY AND MODERNISM (3-0-3)

Graduate version of ARCH 325.

ARCH 628(S) HISTORY IN ARCHITECTURE (3-0-3)

Seminar on the discourse of history in and around architecture and its impact on architectural ideas. *Instructor: Gamard*

ARCH 635(F) INTRODUCTION TO COMPUTER PROJECTS IN ARCHITECTURE (3-0-3)

Graduate version of ARCH 435.

ARCH 636(S) COMPUTER-AIDED DESIGN (3-0-3)

Graduate version of ARCH 436.

ARCH 640(S) ADVANCED COMPUTER MODELING AND RENDERING (3-0-3)

Graduate version of ARCH 440.

ARCH 643(S) CITIES AND HISTORY (3-0-3)

Graduate version of ARCH 343.

ARCH 644(S) CONSTRUCTION AND DESIGN (3-0-3)

Graduate version of ARCH 344.

ARCH 645(F) NATURAL ENVIRONMENT FACTORS (3-0-3)

Graduate version of ARCH 345.

ARCH 646(S) 19TH- AND 20TH-CENTURY ARCHITECTURAL HISTORY (3-0-3)

Graduate version of ARCH 346.

ARCH 647(F) LATE 20TH-CENTURY ARCHITECTURE AND URBANISM (3-0-3)

Examination of the design process and the lived-in form of architecture and urbanism. Includes the development of current building types, new technological practices, emerging urban patterns, the changing role of the architect, and stylistic trends. *Instructor: Ingersoll*

ARCH 650(S) ADVANCED APPLICATIONS IN COMPUTER-AIDED DESIGN (hours variable)

Further exploration of CAD as a design and presentation tool for architectural applications, with emphasis on three-dimensional modeling and two-dimensional drafting as extensions of traditional media and methods of architectural presentation. *Instructor: DeLaura*

ARCH 653(F) PHOTOGRAPHY FOR ARCHITECTS (3-0-3)

Graduate version of ARCH 353.

ARCH 655(F) HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY (3-0-3)

Graduate version of ARCH 455.

ARCH 665(F) GRADUATE SEMINAR: ARCHITECTURAL**ARCH 666(S) DESIGN** (3-0-3 each semester)

Seminars on design theory, with emphasis on participation by visiting critics and professors.

ARCH 667(F) CRITICISM AND ARCHITECTURE (3-0-3)

Seminar on the history of critical writings on architecture from the 18th century to the present. Includes an analysis of the various categories (e.g., aesthetics, politics, and technology) used to criticize architecture projects. *Instructor: Ingersoll*

ARCH 668(S) ANTI-ECOLOGY—ARCHITECTURE AGAINST NATURE, OR A HISTORY OF ECOLOGISM IN ARCHITECTURE (3-0-3)

Analysis of the theory and practice of architecture from the 15th century until postmodernism in terms of its relationship to nature, with emphasis on “anti-ecology” as the pessimistic antithesis to the optimistic pursuit of ecological design, “anti-ecology” being predicated on the idea that human settlement and architecture are inherently against nature. *Instructor: Ingersoll*

ARCH 670(S) THE BAUHAUS AND THE TEXTS OF MODERNISM (3-0-3)

Seminar on the writings of the three successive directors of the Bauhaus: Walter Gropius, Hannes Meyer, and Mies van der Rohe. Includes other important members of the Bauhaus, such as Itten, van Doesburg, Klee, and Schlemmer. *Instructor: Ingersoll*

ARCH 700 PRACTICUM (3-0-3)

Full-time internship in approved local offices under interdisciplinary supervision, with emphasis on “real world” design, planning, or research experiences. Special tuition. May be taken in any semester or in summer.

ARCH 702(S) THESIS PREPARATION (3-0-3)**ARCH 703(F) THESIS STUDIO** (0-10-10)

Instructor: Pope

ARCH 706 WRITTEN THESIS (0-10-10)**ARCH 711.1 SPECIAL PROJECTS** (hours variable)

Independent research or design arranged in consultation with a faculty member subject to approval of faculty adviser and director. *Instructor: Pope*

ARCH 711.2 THESIS PREPARATION (1-0-1)**ARCH 714 INDEPENDENT DESIGN PROJECTS** (hours variable)

Instructor: Pope

ARCH 800 GRADUATE RESEARCH (hours variable)

Instructor: Pope

Studio Art, Film, and Photography (ARTS)

The School of Humanities/Department of Art and Art History

ARTS 205(F) PHOTOGRAPHY I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of the basic materials and processes of the photographic medium. Includes viewing, analysis, and discussion of the medium's history and current trends.

ARTS 206(S) PHOTOGRAPHY II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of ARTS 205. *Instructor: Winningham*

ARTS 216(S) 35MM PHOTOGRAPHY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Introduction to 35mm photography.

ARTS 225 DRAWING I (0-6-3)

DISTRIBUTION COURSE: GROUP I

Introduction to the problems of drawing using various media (e.g., charcoal, pencil, and pen and ink). *Instructors: Keeton, Sparagana*

ARTS 291 SPECIAL PROBLEMS IN DESIGN: CREATIVE THREE-DIMENSIONAL (hours variable)

Study of problems at the introductory level in creative art with individual instruction and criticism. May be used in awarding transfer credit. *Instructor: Smith*

ARTS 292/293 SPECIAL PROBLEMS IN DRAWING (hours variable)

DISTRIBUTION COURSE: GROUP I

ARTS 294 SPECIAL PROBLEMS IN STUDIO ART (hours variable)

ARTS 295 SPECIAL PROBLEMS IN PHOTOGRAPHY (hours variable)

Instructor: Winningham

ARTS 296(S) SPECIAL PROBLEMS IN FILM AND VIDEOTAPE MAKING (hours variable)

Instructor: Huberman

ARTS 301(F) PAINTING I (0-6-3 each semester)

ARTS 302(S)

DISTRIBUTION COURSE: GROUP I

Study of problems in painting, both traditional and experimental, in various opaque media. Prerequisite: ARTS 225 or permission of instructor.

ARTS 305(F) PHOTOGRAPHY III (3-0-3)

Study of advanced problems in photography, with emphasis on the independent pursuit of projects submitted by the students. *Instructor: Winningham*

ARTS 306(S) PHOTOGRAPHY IV (3-0-3)

Continuation of ARTS 305. *Instructor: Winningham*

ARTS 311 PRINTMAKING I (0-6-3)

DISTRIBUTION COURSE: GROUP I

Instruction in black-and-white etching and photo etching. *Instructor: Broker*

ARTS 312 PRINTMAKING II (0-6-3)

DISTRIBUTION COURSE: GROUP I

Instruction in etching and photo etching. Includes advanced color methods. *Instructor: Broker*

ARTS 313 LITHOGRAPHY I (0-6-3)

Instruction in stone and plate lithography in black and white. *Instructor: Broker*

ARTS 320 PRINTMAKING: MONOTYPE (0-6-3)

Introduction to monotype. Includes black-and-white and color monotype printing. Prerequisites:

ARTS 225 and permission of instructor. Not offered in 1997-98.

ARTS 325(F) LIFE DRAWING (0-6-3 each semester)

ARTS 326(S)

DISTRIBUTION COURSE: GROUP I

Instruction in drawing from the model in various media. Prerequisite: permission of instructor.

ARTS 327 FILM AND VIDEOTAPE MAKING I (0-5-3)

DISTRIBUTION COURSE: GROUP I

Study of the expressive possibilities of the media, video documentary production, and 16mm animation. *Instructor: Huberman*

ARTS 328 FILM AND VIDEOTAPE MAKING I (0-5-3)

Continuation of ARTS 327. Includes the completion of one major film project by the class using 16mm film and synchronous sound equipment. Prerequisite: ARTS 327. *Instructor: Huberman*

ARTS 329(F) FILM FORM (3-0-3)

DISTRIBUTION COURSE: GROUP I

Viewing, analysis, and discussion of modern and classic films. *Instructor: Huberman*

ARTS 337(S) COLOR DRAWING (0-6-3)

DISTRIBUTION COURSE: GROUP I

Introduction to color using still lifes and various media (e.g., pastel and watercolor). Prerequisite: permission of instructor.

ARTS 345(F) COLOR PHOTOGRAPHY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the fundamental techniques of color photography. Includes special problems in color camera work, color negative and transparency processing, and color printing. Prerequisites: ARTS 205 and 206.

ARTS 346(S) COLOR PHOTOGRAPHY II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of ARTS 345. *Instructor: Winningham*

ARTS 365(F) SCULPTURE I (0-6-3 each semester)

ARTS 366(S)

DISTRIBUTION COURSE: GROUP I

Exploration of sculpture in wood, metal, and other sculptural media. *Instructor: Smith (fall)*

ARTS 390(S) INVESTIGATING DRAWING: THEORY AND PRACTICE (3-0-3)

Examination of the basic principles of drawing and representation, with emphasis on studio practice, art history, and theory. Includes categories of representation (e.g., still life, landscape, and figure) and the process of making drawings, as well as related readings, group discussions, and writing assignments. May substitute ARTS 390 for ARTS 225 as a studio prerequisite. Corequisite: HART 380.

- ARTS 391-397 SPECIAL PROBLEMS** (hours variable)
 study of problems in creative art with individual instruction and criticism. May be used in awarding transfer credit. Prerequisite: permission of instructor.
- ARTS 391 SPECIAL PROBLEMS IN DRAWING** (hours variable)
- ARTS 392 SPECIAL PROBLEMS IN LIFE DRAWING** (hours variable)
- ARTS 393 SPECIAL PROBLEMS IN PAINTING** (hours variable)
Instructor: Keeton
- ARTS 394 SPECIAL PROBLEMS IN PRINTMAKING** (hours variable)
Instructor: Broker
- ARTS 395 SPECIAL PROBLEMS IN PHOTOGRAPHY** (hours variable)
Instructor: Winningham
- ARTS 396(F) SPECIAL PROBLEMS IN FILM AND VIDEOTAPE MAKING** (hours variable)
Instructor: Huberman
- ARTS 397 SPECIAL PROBLEMS IN SCULPTURE** (hours variable)
Instructor: Smith
- ARTS 420 ADVANCED DRAWING** (0-6-3)
 study of large-scale drawing with conte and pencil. Includes various drawing surfaces and ideas.
- ARTS 423 SPECIAL PROBLEMS IN PAINTING** (hours variable)
- ARTS 427(F) FILM AND VIDEOTAPE MAKING II** (1-5-3 each semester)
ARTS 428(S)
 Completion of one major film project by each student, using either video or 16mm film. *Instructor: Huberman*
- ARTS 432(S) FILM GENRE: THE WESTERN** (3-0-3)
 DISTRIBUTION COURSE: GROUP I
 survey of the essential American film experience spanning all the years of U.S. cinema, with emphasis on the western and its mythic function in society. *Instructor: Huberman*
- ARTS 445/458 SPECIAL PROBLEMS** (hours variable)
 study of advanced problems in creative art with individual instruction and criticism. May be used in awarding transfer credit. Prerequisite: permission of instructor.
- ARTS 445/446 SPECIAL PROBLEMS IN DRAWING** (hours variable)
- ARTS 447/448 SPECIAL PROBLEMS IN LIFE DRAWING** (hours variable)
- ARTS 449/450 SPECIAL PROBLEMS IN PRINTMAKING** (hours variable)
Instructor: Broker
- ARTS 451/452 SPECIAL PROBLEMS IN PAINTING** (hours variable)
Instructor: Poulos
- ARTS 453/454 SPECIAL PROBLEMS IN PHOTOGRAPHY** (hours variable)
Instructor: Winningham

ARTS 455(F) SPECIAL PROBLEMS IN FILM AND VIDEOTAPE MAKING
ARTS 456(S) (hours variable)

Instructor: Huberman

ARTS 457(F) SPECIAL PROBLEMS IN SCULPTURE (hours variable)
ARTS 458(S)

Instructor: Smith (spring)

ARTS 465/466 SCULPTURE II (0-6-3 each semester)

Study of advanced problems in various sculptural media. Prerequisite: ARTS 365-366. *Instructor: Smith*

ARTS 475(F) ADVANCED PAINTING (0-6-3 each semester)
ARTS 476(S)

Study of advanced problems in painting, with emphasis on independent development and participation in class critiques. Prerequisite: permission of instructor.

The following courses at the 500 level are for B.F.A. candidates only.

ARTS 501(F) STUDIO I: PAINTING (0-6-3 each semester)
ARTS 502(S)

Individual work in painting under the direction of one or more staff members.

ARTS 503(F) STUDIO I: SCULPTURE (0-6-3 each semester)
ARTS 504(S)

Individual work in sculpture under the direction of one or more staff members. *Instructor: Smith*

ARTS 505(F) STUDIO I: DRAWING (0-6-3 each semester)
ARTS 506(S)

Individual work in drawing under the direction of one or more staff members.

ARTS 507(F) STUDIO I: LIFE DRAWING (0-6-3 each semester)
ARTS 508(S)

Individual work in life drawing under the direction of one or more staff members.

ARTS 511(F) STUDIO I: PRINTMAKING (0-6-3 each semester)
ARTS 512(S)

Individual work in printmaking under the direction of one or more staff members.

ARTS 513(F) STUDIO I: PHOTOGRAPHY (0-6-3 each semester)
ARTS 514(S)

Individual work in photography under the direction of one or more staff members.

ARTS 515(F) STUDIO I: FILMMAKING (0-6-3 each semester)
ARTS 516(S)

Individual work in filmmaking under the direction of one or more staff members. *Instructor: Huberman*

ARTS 520(F) STUDIO II: PAINTING (0-12-6 each semester)
ARTS 521(S)

The same as ARTS 501-502 with increased credit hours.

ARTS 522(F) STUDIO II: SCULPTURE (0-12-6 each semester)
ARTS 523(S)

The same as ARTS 503-504 with increased credit hours. *Instructor: Smith*

ARTS 524(F) STUDIO II: DRAWING (0-12-6 each semester)

ARTS 525(S)

The same as ARTS 505-506 with increased credit hours.

ARTS 530(F) STUDIO II: PRINTMAKING (0-12-6 each semester)

ARTS 531(S)

The same as ARTS 511-512 with increased credit hours.

ARTS 532(F) STUDIO II: PHOTOGRAPHY (0-12-6 each semester)

ARTS 533(S)

The same as ARTS 513-514 with increased credit hours. *Instructor: Winningham (spring)*

ARTS 534(F) STUDIO II: FILMMAKING (0-12-6 each semester)

ARTS 535(S)

The same as ARTS 515-516 with increased credit hours. *Instructor: Huberman*

ARTS 546(F) STUDIO III: PHOTOGRAPHY (0-18-9 each semester)

ARTS 547(S)

The same as ARTS 532-533 with increased credit hours. *Instructor: Winningham (spring)*

ARTS 548(F) STUDIO III: FILMMAKING (0-18-9 each semester)

ARTS 549(S)

The same as ARTS 534-535 with increased credit hours. *Instructor: Huberman*

Asian Studies (ASIA)

The School of Humanities and the School of Social Sciences

ASIA 211(F) INTRODUCTION TO ASIAN CIVILIZATIONS

Also offered as HIST 211, HUMA 211, and RELI 212.

ASIA 344(F) KOREAN LITERATURE

Also offered as HUMA 344, KORE 344, and LING 344.

ASIA 401(F) INDEPENDENT READING I AND II

ASIA 402(S)

ASIA 412(S) ADVANCED READINGS IN CLASSICAL CHINESE LITERATURE

Also offered as CHIN 412 and HUMA 412.

Biological Sciences (BIOS)

The Wiess School of Natural Sciences/Department of Biochemistry & Cell Biology and Department of Ecology and Evolutionary Biology

BIOS 122(S) FUNDAMENTAL CONCEPTS IN BIOLOGY (3-0-3)

Introduction to specific concepts in modern biology from molecular to organismal levels. May include recombinant DNA, genetic engineering, AIDS, and cardiovascular disease. Open to nonscience, nonengineering majors only. *Instructors: Schroepfer, Stern*

BIOS 201(F) INTRODUCTORY BIOLOGY (3-0-3)

First course in an integrated sequence (BIOS 201-202 and 301-302). Includes chemistry and energetics, cell physiology, cell biology, organ system physiology, immunology, and plant physiology. Required for biosciences majors. Corequisite: CHEM 101 or permission of instructor. *Instructor: Gustin*

BIOS 202(S) INTRODUCTORY BIOLOGY (3-0-3)

Second course in an integrated sequence (BIOS 201-202 and 301-302). Includes transmission genetics, molecular genetics, development, behavior, evolution, ecology, and diversity. Required for biosciences majors. Prerequisite: BIOS 201 or permission of instructor. *Instructors: Harcombe, Subtelny*

BIOS 211 INTRODUCTORY LAB MODULE IN BIOLOGICAL SCIENCES (1-4-2)

Monday lecture and one afternoon lab section. *Students must sign up for a lab section in Anderson, Biological Laboratory, Room 141, during preregistration week; students not signed up will not be registered in BIOS 211.* Taught in first half of the semester starting the first day of classes. Limited enrollment (128). Required for biosciences majors. Co-/Prerequisite: BIOS 201. *Instructor: Caprette*

BIOS 213 INTRODUCTORY LAB MODULE IN ECOLOGY AND EVOLUTIONARY BIOLOGY (1-4-1)

Experimental, laboratory, and field studies of natural history, evolution, and animal behavior. Includes computer simulations of population genetics. Monday lecture and one afternoon lab section during second half of each semester. Limited enrollment (60). Required for biosciences majors. Prerequisite: BIOS 211. *Instructor: Thornhill*

BIOS 301(F) BIOCHEMISTRY (3-0-3)

Third course in an integrated sequence (BIOS 201-202 and 301-302). Includes structure and function of proteins, enzymes, and nucleic acids and molecular biology. Required for biosciences majors and graduate students in biochemistry & cell biology. Prerequisites: CHEM 211-212 and BIOS 201-202 or permission of instructor. *Instructors: Gomer, Olson*

BIOS 302(S) BIOCHEMISTRY (3-0-3)

Fourth course in an integrated sequence (BIOS 201-202 and 301-302). Includes metabolism, membranes, electron transport, oxidative phosphorylation, and regulation. Required for biosciences majors and graduate students in biochemistry & cell biology. Prerequisite: BIOS 301 or permission of instructor. *Instructors: Palmer, Rudolph*

BIOS 310 INDEPENDENT STUDY FOR

UNDERGRADUATES (1 to 4 hours credit each semester)

Program of independent study for students with previous training in the biosciences. Includes a research paper. Students are expected to spend at least three hours per week in the laboratory for each semester hour of credit. If taken for 2 or more hours, counts as one required lab course but *not* as a Group A or B course. Prerequisites: BIOS 201-202, 3 hours of biological sciences lab, and permission of supervising faculty member and department chair. May be repeated for credit. *Instructors: Rudolph, Sass*

BIOS 311 LAB MODULE IN PROTEIN PURIFICATION (1-4-1)

Introduction to biochemical laboratory techniques, with emphasis on study of proteins. Taught in first half of each semester. Limited enrollment (24 per section). Required for biosciences majors. Prerequisite: BIOS 211 or permission of instructor. Corequisite: BIOS 301 or permission of instructor. *Instructor: Cooper*

BIOS 312 LAB MODULE IN MOLECULAR BIOLOGY I (1-4-1)

Introduction to microbiological and molecular biology techniques. Taught in second half of fall semester and first half of spring semester. Limited enrollment (28 per section). Prerequisites: BIOS 211 and 311 or permission of instructor. Corequisite: BIOS 301 or permission of instructor. *Instructors: Cooper, Stewart (fall); Cooper, Gibson, Gomer (spring)*

BIOS 313(S) LAB MODULE IN MOLECULAR BIOLOGY II (1-4-1)

Introduction to DNA sequencing techniques. Taught in second half of spring semester. Limited enrollment (28 per section). Prerequisite: BIOS 311 or permission of instructor. *Instructors: Cooper, Gibson, Gomer*

BIOS 314(S) LAB MODULE IN CELL AND DEVELOPMENTAL BIOLOGY (1-4-1)

Experiments in modern cell biology. Content varies from year to year. Meets two days a week starting after mid-semester break. May alternate with BIOS 318. Limited enrollment. Prerequisites: BIOS 211 and 341 or permission of instructor. *Instructor: Caprette*

BIOS 315(F) LAB MODULE IN PHYSIOLOGY (1-4-1)

Lab-oriented short course in membrane, nerve, and muscle physiology. Meets two days a week for four weeks following midsemester break. Limited enrollment. Prerequisites: BIOS 211 and 301. *Instructor: Caprette*

BIOS 316(F) LAB MODULE IN ECOLOGY (1-4-1)

Field and lab experiments in ecology. Taught in one-half of the semester. Prerequisite: BIOS 213. Corequisite: BIOS 325. *Instructors: Fulton, Harcombe*

BIOS 317(S) LAB MODULE IN BEHAVIOR (1-4-1)

Field experiments in behavior. Includes work in teams to solve the mystery of breeding systems in wild mockingbirds and grackles. Begins after midsemester break. Prerequisites: BIOS 213, 321, and permission of instructor. Limited enrollment (10). *Instructor: Strassmann*

BIOS 318(S) LAB MODULE IN MICROBIOLOGY (1-4-1)

Self-paced study. Includes the isolation, culture, and identification of bacteria from mixed cultures and natural sources, using a variety of culture and observation techniques. Meets two days a week starting after mid-semester break. May alternate with BIOS 314. Limited enrollment. Prerequisites: BIOS 211 and permission of instructor. *Instructor: Caprette*

BIOS 321(F) ANIMAL BEHAVIOR (3-0-3)

GROUP B

Use of evolutionary theory to evaluate behavioral adaptations of organisms to their environment. Prerequisite: BIOS 202 or permission of instructor. *Instructor: Sullender*

BIOS 322(S) GLOBAL ECOSYSTEM DYNAMICS (3-0-3)

GROUP B

Systems analysis of the earth from a biological perspective, with emphasis on biogeochemical cycles and global change. Prerequisites: BIOS 201-202 or permission of instructor. Offered in odd-numbered years. *Instructors: Fisher, Sass*

BIOS 324(S) WETLAND ECOSYSTEMS (3-0-3)

GROUP B

Study of coastal wetlands, including floodplains, swamps, and freshwater, brackish, and saline marsh systems, with regard to biological importance, interactions, wetland development, and management strategies. Prerequisites: BIOS 201-202, 325, 329, and 336 or permission of instructor. Offered in even-numbered years. *Instructors: Fisher, Sass*

BIOS 325(F) ECOLOGY (4-0-4)

GROUP B

Analysis of population dynamics, species interactions, plant and animal community organization, and ecosystem function. Prerequisites: BIOS 201-202 or junior standing in a science/engineering major or permission of instructor. *Instructor: Fulton*

BIOS 329(F) ANIMAL BIOLOGY (3-0-3)

GROUP B

The evolution and systematics of the animal kingdom, with consideration of functional morphology, comparative physiology, behavior, medical implications, and management options. Prerequisites: BIOS 201-202 or permission of instructor. *Instructor: Fisher*

BIOS 334(S) EVOLUTION (3-0-3)

GROUP B

Study of the principles of biological evolution. Includes natural selection, adaptation, molecular evolution, the formation of new species, the fossil record, biogeography, and principles of classification. Prerequisites: BIOS 201-202 or permission of instructor. *Instructor: Queller*

BIOS 336(S) PLANT DIVERSITY (3-0-3)

GROUP B

Analysis of the physiology, morphology, and evolution of plants in terms of their adaptation to the environment. Prerequisites: BIOS 201-202. May not be offered in 1998.

BIOS 341(F) CELL BIOLOGY (3-0-3)

GROUP A

Study of the molecular mechanisms of processes common to all cells. Includes the structure, function, and biogenesis of all subcellular organelles, with emphasis on cytoplasmic events. (Molecular studies of transcription are taught in BIOS 344.) Prerequisites: BIOS 201-202 or permission of instructor. Corequisite: BIOS 301 or permission of instructor. *Instructors: Braam, de Hostos*

BIOS 343(F) DEVELOPMENT (3-0-3)

GROUP A

Analysis of the processes and principles of development as seen in a broad spectrum of eukaryotic organisms. Prerequisites: BIOS 201-202 or permission of instructor. *Instructor: Subtelny*

BIOS 344(S) MOLECULAR BIOLOGY AND GENETICS (3-0-3)

GROUP A

Analysis of the transmission, function, and molecular structure of genetic material. Prerequisites: BIOS 201-202 and 301 or permission of instructor. *Instructor: Stewart*

BIOS 352(S) PHYSICAL CHEMISTRY FOR THE BIOSCIENCES (3-0-3)

GROUP A

Study of selected aspects of physical chemistry as it relates to the biosciences. Includes thermodynamics, reaction rate theory, quantum mechanics, and atomic and molecular structure. Required for biochemistry majors and graduate students in biochemistry & cell biology. Prerequisites: CHEM 211-212, PHYS 125 and 126 (or 101 and 102), and BIOS 301 or permission of instructor. *Instructors: Nikonowicz, Olson*

BIOS 390 TRANSFER CREDIT IN BIOCHEMISTRY & CELL BIOLOGY (3-0-3)

GROUP A.

BIOS 391 TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY (3-0-3)

GROUP B.

BIOS 401(F) UNDERGRADUATE HONORS

BIOS 402(S) RESEARCH (0-15-5 each semester)

Participation in research for at least two semesters. Open only to undergraduate biosciences majors who meet specific requirements. Prerequisites: BIOS 201-202 and 301-302. Corequisites: BIOS 411 for BIOS 401 and BIOS 412 for BIOS 402.

BIOS 411(F) UNDERGRADUATE RESEARCH

BIOS 412(S) SEMINAR (1-0-1 each semester)

Discussion of current research in area under investigation. Corequisites: BIOS 401 for BIOS 411 and BIOS 402 for BIOS 412. *Instructors: Rudolph, Sass*

BIOS 421(S) NEUROBIOLOGY (3-0-3)

GROUP A

Study of the cellular and molecular mechanisms of nervous system function, with emphasis on membrane and synaptic biophysics, sensory and motor systems, neuronal plasticity, and development. Prerequisites: BIOS 201-202 and 301-302. *Instructor: Glantz*

BIOS 422(S) ENDOCRINOLOGY (3-0-3)

GROUP A

Study of the molecular and cellular mechanisms of hormone synthesis and of target cell responses. Includes hormonal interactions in mammalian homeostasis. Prerequisites: BIOS 201-202 and 301-302. *Instructor: Campbell*

BIOS 423(F) IMMUNOBIOLOGY (3-0-3)

GROUP A

Study of the cellular and molecular basis of immune function in mammals. Prerequisites: BIOS 201-202 and 301-302. *Instructor: Campbell*

BIOS 424(S) MICROBIOLOGY AND BIOTECHNOLOGY (3-0-3)

GROUP A

Study of the structure and function of microorganisms, with emphasis on their environmental, industrial, and medical importance. Prerequisites: BIOS 201-202 and 301 or permission of instructor. Corequisite: BIOS 302 or permission of instructor. *Instructor: Bennett*

BIOS 425(F) PLANT MOLECULAR BIOLOGY (3-0-3)**GROUP A**

Study of novel aspects of plant biology and development, with emphasis on molecular and genetic mechanisms. Includes plant responses to the environment and the use of bioengineering and other means to develop new plant products. Prerequisites: BIOS 201-202 and 301 or permission of instructor. *Instructors: Braam, Gibson*

BIOS 432(S) ADVANCED EVOLUTIONARY BIOLOGY (3-0-3)**GROUP B**

In-depth study of selected topics in evolutionary theory and their application to behavior and adaptation. May include kin selection, sexual selection, molecular evolution, evolution of disease, systematics, and population genetics. Prerequisites: BIOS 201-202 and either 321 or 334.

BIOS 442(S) SPECIALIZED CELL FUNCTION (3-0-3)**GROUP A**

Study of structure and/or function specializations seen in selected types of cells and tissues in higher animals. BIOS 341 recommended. Prerequisites: BIOS 201-202 and 301-302. May not be offered in 1997-98.

BIOS 445(F) ADVANCED MOLECULAR BIOLOGY AND GENETICS (3-0-3)**GROUP A**

Study of molecular and genetic aspects of the regulation of gene expression as seen in simple prokaryotic systems and in the model eukaryotic systems used for studies of development. Prerequisites: BIOS 201-202, 301, and 344 or permission of instructor. *Instructors: Beckingham, Stern*

BIOS 481(F) MOLECULAR BIOPHYSICS (3-0-3)**GROUP A**

Examination, at an intermediate level, of the interaction of light with matter. Includes UV-visible absorption, natural optical activity, fluorescence, EXAFS, EPR, NMR of biomolecules, x-ray diffraction and crystallography, neutron scattering, electron microscopy, and theoretical protein dynamics. Required for biochemistry majors. Prerequisites: BIOS 301 and 352 or permission of instructor. *Instructors: Palmer, Phillips*

BIOS 530(S) NMR SPECTROSCOPY (2-6-2)

Advanced treatment and application of modern NMR techniques for extraction of structural and dynamic information from nucleic acid and protein systems; molecular modeling using NMR-derived structural information. Offered during first half of spring semester. Enrollment limited, with priority to graduate students. Prerequisites: BIOS 352 and 481 or permission of instructor. *Instructor: Nikonowicz*

BIOS 531(S) OPTICAL SPECTROSCOPY (2-6-2)

The principles behind fluorescence, circular dichroism, analytical ultracentrifugation, UV-Vis spectroscopy, and rapid kinetics with emphasis on proteins. Offered during second half of spring semester. Enrollment limited, with priority to graduate students. Prerequisites: BIOS 352 and 481 or permission of instructor. *Instructor: Olson*

BIOS 541 SPECIAL TOPICS IN ECOLOGY AND EVOLUTIONARY BIOLOGY (3-0-3)**BIOS 561(F) TOPICS IN EVOLUTION (2-0-2)**

Review and discussion of literature on current research in evolution. Prerequisite: graduate standing or permission of instructor and department chair. *Instructors: Queller, Strassmann*

BIOS 562(S) TOPICS IN BEHAVIORAL ECOLOGY (2-0-2)

Review and discussion of literature on current research in animal behavior. Prerequisite: graduate standing or permission of instructor and department chair. *Instructors: Queller, Strassmann*

BIOS 563(F) TOPICS IN ECOLOGY (2-0-2)

Review and discussion of literature on current research in forest and grassland ecology. Prerequisite: graduate standing or permission of instructor and department chair. *Instructors: Fulton, Harcombe*

BIOS 564(S) TOPICS IN CONSERVATION ECOLOGY (2-0-2)

Review and discussion of literature on current research in conservation biology. Prerequisite: graduate standing or permission of instructor and department chair. *Instructors: Harcombe, Thornhill*

BIOS 565(F) TOPICS IN WETLAND BIOLOGY (2-0-2)

Review and discussion of literature on current research in wetland ecosystems. Prerequisite: graduate standing or permission of instructor and department chair. *Instructors: Fisher, Sass*

BIOS 566(S) TOPICS IN GLOBAL ECOSYSTEM DYNAMICS (2-0-2)

Review and discussion of literature on current research in regional and global ecosystem dynamics. Prerequisite: graduate standing or permission of instructor and department chair. *Instructors: Fisher, Sass*

BIOS 567(F) RESEARCH METHODS IN FIELD BIOLOGY (2-0-2)

Introduction to the field research techniques and practices of individual faculty members. Open to first-year graduate students. Prerequisite: graduate standing or permission of department chair.

BIOS 575(F) INTRODUCTION TO RESEARCH IN BIOCHEMISTRY & CELL BIOLOGY (1-0-1)

Introduction to the research programs and labs of individual faculty members. Open to first-year graduate students. Required for graduate students in biochemistry & cell biology.

**BIOS 581(F) GRADUATE SEMINAR IN BIOCHEMISTRY & CELL
BIOS 582(S) BIOLOGY (1-0-1 each semester)**

Discussion of selected research topics. Required for graduate students in biochemistry & cell biology. *Instructor: Rudolph*

**BIOS 583(F) GRADUATE SEMINAR FOR FIRST-YEAR STUDENTS IN
BIOS 584(S) BIOCHEMISTRY & CELL BIOLOGY (2-0-2 each)**

Review of literature on current biosciences research. Required for graduate students in biochemistry & cell biology.

**BIOS 585 GRADUATE SEMINAR IN ECOLOGY AND
EVOLUTIONARY BIOLOGY (1-0-1)**

Faculty and student presentations on current research. Required for graduate students in ecology and evolutionary biology. *Instructor: Queller*

**BIOS 587(F) GRADUATE SEMINAR FOR SECOND-YEAR STUDENTS
BIOS 588(S) IN BIOCHEMISTRY & CELL BIOLOGY (2-0-2 each)**

Review of literature on current biosciences research. Required for graduate students in biochemistry & cell biology. Prerequisite: second-year graduate standing in Department of Biochemistry & Cell Biology.

BIOS 590 SPECIAL TOPICS IN BIOCHEMISTRY AND CELL BIOLOGY (hours variable)

Development of specific topic areas at the graduate level. Prerequisite: graduate standing or permission of department chair and instructor.

BIOS 591 GRADUATE TEACHING (1-0-1)

Supervised instruction in teaching ecology and evolutionary biology. Prerequisite: graduate standing in Department of Ecology and Evolutionary Biology. *Instructor: Thornhill*

BIOS 592 SEMINAR IN COMPUTATIONAL BIOLOGY (1-0-1)

Discussion of selected research topics in computational biology. Prerequisite: graduate standing or permission of department chair and instructor. *Instructor: Phillips*

BIOS 611(F) RESEARCH SEMINAR (3-0-3 each semester)**BIOS 612(S)**

Discussion of individual laboratory research or current topics in particular areas. Corequisite: BIOS 800 or permission of instructor.

BIOS 621(F) THESIS SEMINAR (1-0-1 each semester)**BIOS 622(S)****BIOS 800 GRADUATE RESEARCH** (hours variable)

Computational and Applied Mathematics (CAAM)

The George R. Brown School of Engineering

CAAM 210(F) INTRODUCTION TO ENGINEERING COMPUTATION (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Introduction to engineering workstations, programming, software systems, and numerical methods. Includes lab applications of computational and visualization methods to problem analysis, with MATLAB as the primary computational and display tool (supplementary programs written in C). Required for computational and applied mathematics majors. May take either CAAM 210 or 211 for credit, but not both. Prerequisites: MATH 101 and PHYS 101. *Instructor: Johnson*

CAAM 211(S) INTRODUCTION TO ENGINEERING COMPUTATION (3-0-3)**DISTRIBUTION COURSE: GROUP III**

See CAAM 210. Supplementary programs written in Fortran. May take either CAAM 210 or 211 for credit, but not both. Prerequisites: MATH 101 and PHYS 101. *Instructor: Akin*

CAAM 310(S) LINEAR ALGEBRA (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Survey of the concepts and results of linear algebra useful in various fields of application. Required for computational and applied mathematics majors.

CAAM 321(F) INTRODUCTION TO REAL ANALYSIS I (3-0-3)

Real numbers, Archimedian property, completeness, sequence and convergence, Bolzano-Weierstrass, Heine-Borel, continuity and related basic themes, the derivative, MVT, elementary functions revisited, Riemann integration, Fundamental Theorem of Calculus, Taylor series, uniform convergence of sequence and series, Weierstrass M-function. Prerequisite: MATH 212 or permission of instructor.

CAAM 322(S) INTRODUCTION TO REAL ANALYSIS I (3-0-3)

Continuation of CAAM 321. Linear and inner product structure of R^n , linear maps and matrices, matrix norms, convergence of sequences, continuity and differentiability of functions on R^n , the derivative as a linear map, normed linear spaces, completeness, the contraction mapping principle, inverse and implicit function theorems, fundamental theorems on ODEs, compactness and Arzela-Ascoli, domains and their boundaries, the concept of manifold, boundaries and manifolds, differential forms, the exterior calculus, integration in R^n , Stoke's Theorem. Prerequisite: CAAM 321.

CAAM 321(F) INTRODUCTION TO REAL ANALYSIS I (3-0-3)

Real numbers, Archimedian property, completeness, sequence and convergence, Bolzano-Weierstrass, Heine-Borel, continuity and related basic themes, the derivative, MVT, elementary functions revisited, Riemann integration, Fundamental Theorem of Calculus, Taylor series, uniform convergence of sequence and series, Weierstrass M-function. Prerequisite: MATH 212 or permission of instructor.

CAAM 335(F) FOUNDATIONS OF APPLIED MATHEMATICS I (3-0-3)

Study of analytical and numerical methods applied to problems of fluid and solid mechanics and electromagnetism, with extensive use of MATLAB. First of a two-semester sequence. Prerequisites: MATH 211 and 212. *Instructor: Cox*

CAAM 336(S) FOUNDATIONS OF APPLIED MATHEMATICS II (3-0-3)

Continuation of CAAM 335.

CAAM 353(S) COMPUTATIONAL NUMERICAL ANALYSIS (3-0-3)

Introductory course in numerical analysis with computer applications. Required for computational and applied mathematics majors. Prerequisite: MATH 211.

CAAM 376(F) INTRODUCTION TO MANAGEMENT SCIENCE (3-0-3)

Study of mathematical models in deterministic and stochastic situations. Includes linear programming, inventory theory, decision theory, and waiting line theory. Prerequisite: a statistics course.

CAAM 378(S) INTRODUCTION TO OPERATIONS RESEARCH (3-0-3)

See CAAM 376. Alternative course for students with a year of calculus. Some knowledge of linear algebra and probability recommended.

CAAM 381 INTRODUCTION TO APPLIED PROBABILITY (3-0-3)

Survey of the concepts, interpretations, elementary techniques, and applications of modern probability theory. Prerequisite: MATH 102. Also offered as ELEC 331 and STAT 381. *Instructor: Pfeiffer*

CAAM 400(F) CASE STUDIES IN APPLIED MATHEMATICS (3-0-3)

In-depth study of selected scientific and technological problems and the mathematical tools useful in their solution. Includes the formulation of mathematical models from physical principles and the application of dimensional analysis, perturbation theory, asymptotic expansions, eigenfunction series, and other techniques. CAAM 335-336 or MATH 381 recommended. Not offered every year.

CAAM 420(S) INTRODUCTION TO COMPUTATIONAL SCIENCE (3-0-3)

Survey of vector and parallel computer architectures, parallel numerical algorithms, scientific visualization, the analysis and enhancement of performance, and the use of programming tools and environments. Includes programming assignments involving "hands-on" experience with supercomputers and parallel computers. Required for graduate students in M.C.S.E. program. Prerequisites: COMP 210 and CAAM 353.

CAAM 432 TENSOR ANALYSIS (3-0-3)

Review of linear algebra. Includes tensor algebra, tensor analysis on Euclidean spaces, and applications to particle mechanics, continuum mechanics, and electromagnetic theory. Prerequisite: linear algebra.

CAAM 435(S) ORDINARY DIFFERENTIAL EQUATIONS AND DYNAMICAL SYSTEMS (3-0-3)

Review of existence, uniqueness, and continuous dependence for IVP. Phase plane analysis of fixed points, Poincare-Bendixson, Liapounov functions, basic concepts from dynamical systems. Hamiltonian systems. Sturm Liouville problems, oscillation, classification of boundary points, spectral theory. Prerequisites: CAAM 321 and 322. CAAM 322 may be taken concurrently.

CAAM 436(F) PARTIAL DIFFERENTIAL EQUATIONS I (3-0-3)

Derivation and solution of basic equations of continuum physics. First semester: continuum mechanics derived from first principles, Navier Stokes, linear elasticity. Polisson problem, Green's function, variational formulation, need for completion, concept of completion, Sobolev spaces as completions, Rayleigh-Ritz Principle, existence of weak solutions of Poisson problem, basis of the finite element method. Prerequisites: CAAM 321 and 322.

CAAM 437(S) PARTIAL DIFFERENTIAL EQUATIONS II (3-0-3)

Continuation of CAAM 436. Newtonian heat flow, the Gaussian kernel, Fourier transform in L^2 , analysis of smoothing property, Maxwell's equations, weak solutions, distributions, propagation of discontinuity in 1D, Green's function in 3D, Fourier analysis, additional topics at discretion of instructor. Prerequisite: CAAM 436.

CAAM 451(F) NUMERICAL LINEAR ALGEBRA (3-0-3)

Detailed study of numerical methods for the basic problems of linear algebra. Includes the derivation, analysis, and computer implementation of algorithms for the solution of linear systems, least squares problems, eigenvalue problems, floating point arithmetic, rounding error analysis, matrix and vector norms, and sensitivity analysis. Prerequisite: CAAM 310 or MATH 355.
Instructor: Sorensen

CAAM 452(S) COMPUTATIONAL METHODS FOR DIFFERENTIAL EQUATIONS (4-0-4)

Study of finite difference, variational, and collocation methods for approximating numerically the solutions of ordinary and partial differential equations. Includes computer implementation to verify convergence to the solution.

CAAM 453(F) NUMERICAL ANALYSIS-ORDINARY DIFFERENTIAL EQUATIONS (3-0-3)

Study of Runge-Kutta, linear, and multistep methods of analysis, stability analysis and stiffness for initial-value problems, and finite difference, finite element, collocation, and shooting methods for two-point boundary value problems. Prerequisite: MATH 211.

CAAM 454(S) OPTIMIZATION PROBLEMS IN COMPUTATIONAL ENGINEERING AND SCIENCE (3-0-3)

Introduction to the formulation of optimization problems, with practical applications. Includes appropriate algorithms for systems of nonlinear equations, parameter identification for differential equations, and basic reduction methods (with examples). Complements CAAM 460. Prerequisites: proficiency in Fortran or C, numerical linear algebra, and calculus, and MATH 211 and 212.

CAAM 460(F) OPTIMIZATION THEORY (3-0-3)

Derivation and application of necessity conditions and sufficiency conditions for constrained optimization problems. Prerequisites: MATH 212 and linear algebra. *Instructor: Tapia*

CAAM 471(F) LINEAR PROGRAMMING (3-0-3)

Formulation of managerial and technical problems. Includes the simplex method, the revised simplex method, duality theory and its applications, transportation problems, and decomposition techniques. Also offered as ECON 471.

CAAM 472 GAME THEORY AND DECISION ANALYSIS (3-0-3)

Study of matrix games, relation to linear programming, nonzero sum games, games against nature, decision trees, models for group decisions, utility theory, and benefit-cost models. Not offered 1997-98.

CAAM 474(F) THEORY OF LINEAR INEQUALITIES (3-0-3)

This course studies systems of linear inequalities and their geometric interpretation as polyhedra, with special attention to the theoretical foundations of linear and integer programming, including Farkas' lemma, duality, polarity, and the finite basis theorem. *Instructor: Cook*

CAAM 475(S) INTEGER AND COMBINATORIAL OPTIMIZATION (3-0-3)

Modeling and solving of optimization problems with discrete components. Includes graphs and networks, network flow problems, minimum spanning trees, basic polyhedral theory, some standard problems, computational complexity, branch and bound, cutting planes, Lagrangian relaxation, and Benders' decomposition. Prerequisite: CAAM 471. Also offered as ECON 475.

CAAM 476(S) OPERATIONS RESEARCH-STOCHASTIC MODELS (3-0-3)

Study of probability and decisions, random selection, Markov chains and decision processes, waiting lines, and martingale models. Prerequisite: CAAM 381 or STAT 310. Also offered as ECON 476. *Instructor: Pfeiffer*

CAAM 479 OPERATIONS RESEARCH-ELEMENTARY DISCRETE OPTIMIZATION (3-0-3)

Elementary treatment of ill-behaved optimization problems. Includes discrete dynamic programming and integer programming, with emphasis on theory, formulation, and computational methods. Prerequisite: CAAM 471. Not offered 1997-98.

CAAM 483 MARKOV AND MARTINGALE SEQUENCES-RENEWAL PROCESSES (3-0-3)

Study of the Markov property and Markov sequences. Includes discrete parameter martingales and Poisson and other renewal processes. Prerequisite: CAAM 381. Also offered as STAT 483. Not offered 1997-98.

CAAM 490(F) INDEPENDENT STUDY (hours variable)**CAAM 491(S)****CAAM 501(F) UNIX FOR SCIENTIFIC AND ENGINEERING APPLICATIONS (1-0-1)**

Topics covered, to be revised as necessary per participants' request: the Unix file system, shell interaction (sch, tesh, sh); customizing your environment; dealing with X windows; elementary shell programming; make; revision control systems; compiling, linking; debugging; performance monitoring and tuning; html. *Instructor: Pearlman*

CAAM 502(S) UNIX FOR SCIENTIFIC AND ENGINEERING APPLICATIONS (1-0-1)

Continuation of CAAM 501. *Instructor: Pearlman*

CAAM 512(F) INTRODUCTION TO GRAPH THEORY (3-0-3)

Basic problems, concepts, theorems, and solution strategies in modern graph theory.

CAAM 522(S) PROGRAMMING FOR COMPUTATIONAL MATHEMATICS (3-0-3)

Programming techniques, style, data structures, and algorithms for efficient computational mathematics. *Instructor: Hoppe*

CAAM 533 ADVANCED TENSOR ANALYSIS (3-0-3)

Study of differential and integral calculus on manifolds, Riemannian geometry, calculus of variations, and Hamilton-Jacobi theory, with applications to analytical mechanics and relativity and continuum mechanics. Prerequisite: CAAM 432. Not offered 1997-98.

CAAM 535 MATHEMATICAL THEORY OF NONLINEAR ELASTICITY (3-0-3)

Study of representation theory for constitutive relations for elasticity. Includes homogeneous and inhomogeneous bodies, wave propagation, and second-order elasticity and approximations. Prerequisites: MECH 511 and 512 or CAAM 432. Not offered 1997-98.

CAAM 540(S) APPLIED FUNCTIONAL ANALYSIS (3-0-3)

Application of basic concepts and theorems in functional analysis to mechanics, quantum mechanics, and/or optimal control problems. Not offered 1997-98.

CAAM 541 PARTIAL DIFFERENTIAL EQUATIONS I (3-0-3)

Study of boundary value problems in mathematical physics, function spaces and distributions, the direct method in the calculus of variations, Green's functions and integral equations, compact operators, spectral theory, and regular and singular Sturm-Liouville problems. Prerequisites: MATH 423 and 425 or permission of instructor.

CAAM 542 PARTIAL DIFFERENTIAL EQUATIONS II (3-0-3)

Continuation of CAAM 541. Includes local existence of solutions, Hamilton-Jacobi theory, classical theory of the heat and wave equations, weak solutions, Sobolev spaces, and boundary regularity of solutions of elliptic boundary value problems, with additional topics at the discretion of the instructor.

CAAM 551(S) ADVANCED NUMERICAL LINEAR ALGEBRA (3-0-3)

Study of iterative and/or direct methods for large-scale problems. May be repeated for credit with permission of instructor. Prerequisite: CAAM 451 or permission of instructor.

CAAM 552(F) NUMERICAL METHODS PARTIAL DIFFERENTIAL EQUATIONS I (3-0-3)

Analysis of modern numerical methods. Includes finite difference methods, finite element methods, collocation methods, and associated algebraic problems.

CAAM 553(S) NUMERICAL METHODS PARTIAL DIFFERENTIAL EQUATIONS II (3-0-3)

Continuation of CAAM 552.

CAAM 554(S) NUMERICAL NONLINEAR PROGRAMMING (3-0-3)

Analysis of modern numerical methods for constrained problems. Includes variable metric methods, successive quadratic programming, and trust region methods. Not offered every year. *Instructor: Tapia*

CAAM 563(F) ENGINEERING APPROACH TO MATHEMATICAL PROGRAMMING (3-0-3)

Study of the minimization of functions of variables that are either unconstrained, subject to equality constraints, subject to inequality constraints, or subject to both equality and inequality constraints. Includes analytical and numerical methods. Also offered as MECH 563. *Instructor: Miele*

CAAM 564(S) ENGINEERING APPROACH TO OPTIMAL CONTROL (3-0-3)

Study of optimal control theory and calculus of variations. Includes minimization of functionals depending on variables subject to differential constraints, nondifferential constraints, initial constraints, and final constraints, as well as analytical and computational methods. Also offered as MECH 564. *Instructor: Miele*

CAAM 571(S) ADVANCED INTEGER AND COMBINATORIAL OPTIMIZATION (3-0-3)

Content varies from year to year, with emphasis on methods for solving optimization problems with discrete components. May include polyhedral structure of fundamental problem classes, matrix properties of integral polyhedra, cardinality and weighted matching, matroids and polymatroids, submodular functions, the ellipsoid algorithm and its consequences, integer lattices, and advanced integer programming techniques. Prerequisite: CAAM 475. *Instructor: Bixby*

CAAM 574 INTEGER PROGRAMMING (3-0-3)

Study of applications, theory, and computational methods in pure and mixed integer programming. Includes special problem structures. Not offered every year.

CAAM 575 TOPICS IN INTEGER PROGRAMMING (2-0-2)

Seminar on selected topics in integer programming. Content varies from year to year. May be repeated for credit.

CAAM 581(F) MATHEMATICAL PROBABILITY I (3-0-3)

Introduction to the measure-theoretic foundations of probability. Open to qualified undergraduates and students who need access to advanced mathematical literature in probability and random processes. Prerequisite: CAAM 381. Also offered as STAT 581. *Instructor: Pfeiffer*

CAAM 582(S) MATHEMATICAL PROBABILITY II (3-0-3)

Continuation of CAAM 581. Also offered as STAT 582. *Instructor: Pfeiffer*

CAAM 583(F) INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS (3-0-3)

Review of basic probability and the formulation, analysis, representations, and applications of some standard random processes. Includes sequence of random variables, random vectors and estimation, basic concepts of random processes, random processes in linear systems, expansion of random processes, Wiener filtering, spectral representation of random processes, and white-noise integrals. CAAM 581 or a course in real variable theory recommended. Prerequisite: CAAM 381. Also offered as ELEC 533 and STAT 583. *Instructor: Aazhang*

CAAM 584 ESTIMATION THEORY (3-0-3)

Study of maximum likelihood and Bayesian vector parameter estimation, minimum mean square error estimation, and time series analysis. Includes algorithms based on state variable and ARMA models for signal estimation, model identification, and spectral estimation. CAAM 583 recommended. Prerequisite: CAAM 381. Also offered as ELEC 534 and STAT 584. Not offered 1997-98.

CAAM 585 INFORMATION AND CODING THEORY (3-0-3)

Introduction to information theory concepts and the basic theorems of channel coding and source coding with a fidelity criterion. Includes techniques of channel coding, parity check codes, and introduction to algebraic coding theory and convolutional codes, and variable-length source coding. Prerequisite: CAAM 381. Also offered as ELEC 535.

CAAM 587 ADVANCED STOCHASTIC PROCESSES (3-0-3)

Study of measure-theoretic probability, separability and measurability, analytic properties of sample functions, standard properties of second-order processes, and continuous-parameter Markov processes and martingales. Prerequisite: CAAM 581 or 583. Also offered as ELEC 587. Not offered 1997-98.

CAAM 590(F) INDEPENDENT STUDY (3 to 6 hours credit each semester)

CAAM 591(S)

CAAM 592(S) MATHEMATICS OF REFLECTION SEISMOLOGY (3-0-3)

Review of elastodynamics. Calculation of synthetic seismograms for acoustic and elastic media using reflectivity, asymptotic, and finite difference methods. Migration of reflection data by finite difference. FK and boundary integral methods. Traveltime inversion. Also offered as GEOL 542. Prerequisite: GEOL 441, 442 or CAAM 335, 336. GEOL 461 recommended. Not offered every year. *Instructors: Levander, Symes, Zelt*

CAAM 593 TOPICS IN APPLIED MATHEMATICS (3-0-3)**CAAM 594/595 TOPICS IN APPLIED PROBABILITY (3-0-3 each semester)****CAAM 597(S) SPECIAL TOPICS IN COMPUTATIONAL AND APPLIED MATHEMATICS (3-0-3)****CAAM 601(F) RESEARCH ETHICS SEMINAR (2-0-2)**

This case-based course will focus on incidents and issues commonly encountered in the preparation, conduct, and reporting of scientific research. Topics covered include: peer review, conducting research, authorship, research fraud, and conflicts of interest (bioethics issues will not be covered in this course). Also offered as COMP 601. *Instructors: Dennis, Vardi*

CAAM 652 TOPICS IN NUMERICAL DIFFERENTIAL EQUATIONS (3-0-3)

May be repeated for credit if the change of content justifies. Not offered every year.

CAAM 654(F) TOPICS IN OPTIMIZATION (3-0-3)

Content varies from year to year. *Instructor: Tapia*

CAAM 800 THESIS (hours variable)

Chemical Engineering (CENG)

The George R. Brown School of Engineering

CENG 301(F) CHEMICAL ENGINEERING FUNDAMENTALS (3-0-3)

Exploration of the use of basic mathematical concepts, physical laws, stoichiometry, and the thermodynamic properties of matter to obtain material and energy balances for steady and unsteady state systems. Required for sophomores intending to major in chemical engineering. Corequisite: CENG 303. *Instructor: Shanks*

CENG 302(S) SEPARATION PROCESSES (3-3-4)

Analysis and design of single- and multistage contacting operations involving binary and multicomponent systems. Required for majors in chemical engineering. *Instructor: Dyson*

CENG 303(F) MATLAB AND MAPLE FOR CHEMICAL ENGINEERS (0-3-1)

Lab in how to use workstations, the computer language MATLAB, which is applied extensively in CENG 301, and Maple, which is used in several upper-level chemical engineering courses. Required for majors in chemical engineering. Corequisite for students in CENG 301. *Instructor: Davis*

CENG 343(F) CHEMICAL ENGINEERING LAB I (1-3-2)

Experiments demonstrating the principles presented in CENG 301, 302, and 390. Required for majors in chemical engineering. *Instructor: Hightower*

CENG 390(F) KINETICS AND REACTOR DESIGN (3-0-3)

Study of the principles and significance of chemical kinetics. Includes procedures for evaluating kinetic parameters from reaction rate data and the application of these methods to design (and to predict the performance of) various types of ideal and nonideal chemical reactors in both homogeneous and heterogeneous systems. Required for majors in chemical engineering. *Instructor: Hightower*

CENG 401(F) TRANSPORT PHENOMENA I (3-0-3)

Study of the fundamental principles of heat, mass, and momentum transport applied to the continuum. Includes an analysis of macroscopic physical systems based on continuum equations and applications in chemical engineering practice. Required for majors in chemical engineering. *Instructor: Dyson*

CENG 402(S) TRANSPORT PHENOMENA II (3-0-3)

Continuation of CENG 401. Required for majors in chemical engineering. *Instructor: Davis*

CENG 403(F) EQUIPMENT DESIGN (3-3-4)

Design and economic analysis of chemical process equipment. Includes the use of computer design packages in the analysis of chemical equipment. Required for B.S. majors in chemical engineering. *Instructor: Davis*

CENG 404(S) PROCESS DESIGN (3-3-4)

Study of the optimal design of chemical processes and survey of industrial economic principles. Includes special process design projects in small groups. Required for B.S. majors in chemical engineering. *Instructor: Badgwell*

CENG 411(F) THERMODYNAMICS I (3-0-3)

Development and application of the first and second laws of thermodynamics. Required for majors in chemical engineering. *Instructor: Robert*

CENG 412(S) THERMODYNAMICS II (3-0-3)

Advanced treatment of chemical and phase equilibrium in multicomponent systems. Includes a detailed study of nonideal solutions. Required for majors in chemical engineering. *Instructor: Miller*

CENG 420(F) BIOSYSTEMS TRANSPORT AND REACTION PROCESSES (3-0-3)

Application of the basic principles of transport and reaction to analyze momentum, heat, mass transport, and reaction processes in the human body. Includes mathematical modeling to describe physiologic function, to understand pathological conditions, and to design bioartificial organs, with emphasis on the quantification of biomedical systems in relation to underlying molecular mechanisms and cellular behavior. Prerequisite: MATH 211 and 212. *Instructor: Mikos*

CENG 443(F) CHEMICAL ENGINEERING LAB II (1-3-2)

Experiments demonstrating transport coefficient measurement, forced and free convection transfer operations, and thermodynamic principles as covered in CENG 401, 402, and 411. Required for majors in chemical engineering. *Instructor: Dyson*

CENG 444(S) CHEMICAL ENGINEERING LAB III (1-3-2)

Continuation of CENG 443. Required for majors in chemical engineering. *Instructor: Dyson*

CENG 470(F) PROCESS DYNAMICS AND CONTROL (3-0-3)

Instruction in modeling of dynamic processes. Includes the response of uncontrolled systems, transfer functions, feedback controllers, the response and stability of controlled systems, frequency response, and cascade, feed-forward, and multivariable control systems, as well as an introduction to computer control and the use of simulators to design feedback controllers. Required for B.S. majors in chemical engineering. Prerequisites: CENG 301 and 302, MATH 211 and 212, and PHYS 101 and 102. *Instructors: San, Zygorakis*

CENG 471(S) PROCESS DYNAMICS AND CONTROL LAB (0-3-1)

Experimentation with a laboratory computer control system. Required for B.S. majors in chemical engineering. Prerequisite: CENG 470. *Instructors: San, Zygorakis*

CENG 500 UNDERGRADUATE RESEARCH (1 to 6 hours credit)

Independent investigation of a specific topic or problem in modern chemical engineering research under the direction of a selected faculty member. May be repeated for credit. Prerequisite: permission of department. *Instructor: Davis*

CENG 501(F) FLUID MECHANICS AND TRANSPORT PROCESSES (3-0-3)

Advanced study in fluid mechanics and transport processes. Includes analytical and numerical approximation methods, boundary layer theory, and potential flow theory. *Instructor: Robert*

CENG 503(S) CHEMICAL ENGINEERING PROCESSES: AIR POLLUTION (2-0-2)

Application of the principles of staged processes, transport phenomena, kinetics, and economics to the simulation, design, and operation of equipment and processes. *Instructor: McKee*

CENG 540(S) STATISTICAL MECHANICS (3-0-3)

A development of the principles of statistical mechanics with applications to problems of chemical interest. Prerequisites: CHEM 311 and 312 or equivalent. Also offered as CHEM 522. Not offered 1997-98.

CENG 551(F) INTRODUCTION TO BIOENGINEERING (1-0-1)

Seminar/tutorial introducing current research in bioengineering and biotechnology to acquaint students with activities of various labs at Rice and the Texas Medical Center. Prerequisite: graduate standing or permission of instructor. Also offered as ELEC 551. *Instructor: McIntire*

CENG 560(F) INTERFACIAL PHENOMENA (3-0-3)

Study of interfacial tension, wetting and spreading, contact angle hysteresis, interaction between colloid particles, stability of interfaces, and flow and transport near interfaces. Not offered 1997-98.

CENG 571(F) FLOW AND TRANSPORT THROUGH POROUS MEDIA I (3-0-3)

Study of the geology, chemistry, and physics of multicomponent, multiphase fluids in porous media. Includes hydrostatic and hydrodynamic properties of fluids in soils and rocks and the simulation of fundamental transport processes in one dimension. *Instructor: Hirasaki*

CENG 580(S) INTRODUCTION TO BIOCHEMICAL ENGINEERING (3-0-3)

Study of enzyme kinetics, immobilized enzymes, cell cultivation, the stoichiometry of microbial growth and product formation, bioreactor design, agitation and aeration, and downstream processing. *Instructor: San*

CENG 582(S) NMR SPECTROSCOPY IN ENGINEERING (3-0-3)

Survey of the basic principles and applications of nuclear magnetic resonance spectroscopy to chemical engineering problems, using material from current literature. Includes *in vivo* NMR, imaging, NMR microscopy, two-dimensional methods, and solid state. Limited enrollment (15). *Instructor: Shanks*

CENG 590(S) KINETICS, CATALYSIS, REACTOR ENGINEERING (3-0-3)

Review of kinetics and reactor design equations, heterogeneous catalysis, and catalyst preparation, diffusion, and reaction in catalyst pellets. Includes conservation equations, analysis of stirred tank, tubular, and nonideal reactors, multiplicity and stability of steady states, and a comprehensive laboratory experiment on catalysis. *Instructors: Hightower, Zygourakis*

CENG 591(S) HETEROGENEOUS CATALYSIS (3-0-3)

Study of the principles of heterogeneous catalysis. Includes catalyst preparation and measurement, the significance of surface physical and chemical properties, adsorption, heterogeneous kinetics, diffusion in porous media, catalyst poisoning and regeneration, aspects of reactor engineering, and a review of selected commercial catalytic reactions. Prerequisite: CENG 390 (or equivalent). Not offered 1997-98.

CENG 592(S) REACTION ENGINEERING (2-0-2)

Study of conservation equations and the analysis and design of continuous flow, stirred tank, and tubular reactors. Includes the multiplicity and stability of steady states and nonideal reactors. Prerequisite: CENG 390 (or equivalent). Not offered 1997-98.

CENG 593(F) POLYMER SCIENCE AND ENGINEERING (3-0-3)

Basic concepts in macromolecular chemistry and their application in the synthesis and chemical modification of polymers. Prerequisites: CHEM 211-212. Also offered as MSCI 593. *Instructor: Armeniades*

CENG 594(S) PROPERTIES OF POLYMERS (3-0-3)

Study of the molecular organization and physical properties of polymeric materials. Includes elastomeric, semicrystalline, and glassy polymers, as well as the processing and technology of polymeric systems. Also offered as MSCI 594. *Instructor: Armeniades*

CENG 600 M.C.H.E. RESEARCH (1 to 6 hours credit)

Independent investigation of a topic or a problem in modern chemical engineering research under the direction of a selected faculty member. May be repeated for credit. Prerequisite: permission of department. *Instructor: Hightower*

CENG 601(F) FLUID MECHANICS AND TRANSPORT (3-0-3)

Advanced study in one of several areas of fluid mechanics or transport. Includes tensor analysis, continuum mechanics, rheology, and mathematical methods of special interest in fluid mechanics. Not offered 1997-98.

CENG 602(S) PHYSICOCHEMICAL HYDRODYNAMICS (3-0-3)

Study of hydrodynamics. Includes waves on liquid surfaces, convective diffusion in liquid bubbles, and electrophoresis. *Instructor: McIntire*

CENG 611(F) ADVANCED TOPICS IN THERMODYNAMICS (3-0-3)

Advanced treatment of the thermodynamics of pure and multicomponent systems. Includes topics ranging from classical thermodynamics to a discussion of modern developments. Not offered 1997-98.

CENG 615(S) APPLICATION OF MOLECULAR SIMULATION AND STATISTICAL MECHANICS (3-0-3)

Instruction in molecular simulation techniques and the application of statistical mechanics-based theory to engineering problems. Includes topics of current research interest. Prerequisites: knowledge of thermodynamics and familiarity with statistical mechanics. Not offered 1997-98.

CENG 620(S) TISSUE ENGINEERING (3-0-3)

Study of cell-cell interactions and the role of the extracellular matrix in the structure and function of normal and pathological tissues. Includes strategies to regenerate metabolic organs and to repair structural tissues, as well as cell-based therapies to deliver proteins and other therapeutic drugs, with emphasis on issues related to cell and tissue transplantation such as substrate properties, angiogenesis, growth stimulation, cell differentiation, and immunoprotection. Not offered 1997-98.

CENG 661(F) GRADUATE SEMINAR (1-0-1 each semester)**CENG 662(S)**

May be repeated for credit. *Instructors: Armeniades (fall), Miller (spring)*

CENG 671(S) FLOW AND TRANSPORT THROUGH POROUS MEDIA II (3-0-3)

Instruction in the calculation of multicomponent-multiphase transport in one to three dimensions using finite difference methods. Includes development of multidimensional models of systems and the representation and estimation of geological heterogeneity. *Instructor: Hirasaki*

CENG 672(F) APPLIED MATHEMATICS I (3-0-3)

Application of mathematics to engineering problems. Includes such topics as vector spaces, linear transformations, linear equations, Gauss elimination, band matrices, finite differences, determinants, inner products, norms, orthogonality, eigenvalues and eigenvectors, diagonalization, similarity transformations, ordinary differential equations, unitary transformations, Jordan canonical forms, quadratic forms, least squares, QR factorization, and an introduction to finite elements. *Instructors: Mikos, Zygorakis*

CENG 675(F) ELEMENTS OF MODERN CONTROL THEORY (3-0-3)

Study of the dynamics of multivariable processes, discrete and continuous time representations, optimal control theory, internal model control, and model predictive control. *Instructor: Badgwell*

CENG 681(F) ADVANCED TOPICS IN BIOCHEMICAL ENGINEERING (3-0-3)

Advanced study in several areas. May include the modeling of biological systems, the measurement and control of bioreactors, the genetic and metabolic engineering of microorganisms, plant cell cultures, and animal cell cultures. *Instructor: San*

CENG 700 M.S. RESEARCH AND THESIS (1 to 12 hours credit)

May be repeated for credit. *Instructor: Hightower*

CENG 760 BAYLOR/RICE M.D./PH.D. PROGRAM (1 to 3 hours credit)
Prerequisite: permission of department. May be repeated for credit. *Instructor: Miller*

CENG 800 PH.D. RESEARCH (hours variable)
May be repeated for credit. *Instructor: Miller*

Chemistry (CHEM)

The Wiess School of Natural Sciences

CHEM 101(F) GENERAL CHEMISTRY (3-0-3)
DISTRIBUTION COURSE: GROUP III

Introduction to chemical phenomena, with emphasis on problems and methods in chemistry. Required for chemistry and chemical physics majors (may substitute CHEM 111 for CHEM 101 as a prerequisite for upper-level study in chemistry, but may take only one for credit). Prerequisite: high school chemistry. *Instructor: Hutchinson*

CHEM 102(S) GENERAL CHEMISTRY (3-0-3)
DISTRIBUTION COURSE: GROUP III

Continuation of CHEM 101. Required for chemistry and chemical physics majors (may substitute CHEM 112 for CHEM 102 as a prerequisite for upper-level study in chemistry, but may take only one for credit). Prerequisite: CHEM 101 or 111. *Instructor: Glass*

CHEM 105 INTRODUCTORY LAB IN QUANTITATIVE CHEMISTRY (1-4-2)

Instruction in laboratory measurement of chemical composition, acid-base equilibria, equilibrium constants, heats of reaction, optical spectra, and reaction kinetics, using a variety of classical and instrumental methods. Lecture and one afternoon lab section. Prerequisite for upper-level courses in chemistry. Required for chemistry and chemical physics majors. Corequisite (normally): CHEM 101 or 111 and 102 or 112. *Instructors: Curl, Weisman*

CHEM 106(S) HONORS LABORATORY (0-4-1)

Independent projects in synthesis and characterization of compounds. Prerequisites: CHEM 101 or 111 and permission of instructor. *Instructor: Barron*

CHEM 111(F) HONORS CHEMISTRY (3-0-3)
DISTRIBUTION COURSE: GROUP III

An in-depth survey of chemical phenomena emphasizing principles and theories in chemistry. Recommended strongly for students who plan to major in chemistry and for those with a strong high school background in the subject. (May substitute CHEM 111 for CHEM 101 as prerequisite for upper-level study in chemistry, but may take only one for credit.) Enrollment limited. Prerequisite: high school chemistry, physics, calculus, and permission of instructor. *Instructor: Whitmire*

CHEM 112(S) HONORS CHEMISTRY (3-0-3)
DISTRIBUTION COURSE: GROUP III

Continuation of CHEM 111. May not receive credit for both CHEM 102 and 112. Prerequisite: CHEM 111 or permission of instructor. *Instructor: Wilson*

CHEM 211(F) ORGANIC CHEMISTRY (3-0-3)
DISTRIBUTION COURSE: GROUP III

Study of aliphatic and aromatic organic chemistry, with emphasis on structure, bonding, and reaction mechanisms. Required for chemistry and chemical physics majors. Must take CHEM 211 before CHEM 212. Prerequisites: CHEM 101-102 or 111-112. Corequisite (normally): CHEM 213. *Instructor: Ciufolini*

CHEM 212(S) ORGANIC CHEMISTRY (3-0-3)

DISTRIBUTION COURSE: GROUP III

Continuation of CHEM 211, with emphasis on the chemistry of various functional groups. Required for chemistry and chemical physics majors. Prerequisite: CHEM 211. Corequisite (normally): CHEM 214. *Instructor: Singleton*

CHEM 213(F) ORGANIC CHEMISTRY LAB (0-4-1)

Study of the synthesis, purification, and characterization of organic compounds. Includes experiments related to topics covered in CHEM 211-212. Lecture followed by lab once a week. Required for chemistry and chemical physics majors. Corequisite: CHEM 211. *Instructors: Billups, Matsuda*

CHEM 214(S) ORGANIC CHEMISTRY LAB (0-4-1)

Continuation of CHEM 213. Includes the identification of unknown organic compounds. Required for chemistry and chemical physics majors. Prerequisite: CHEM 213. Corequisite: CHEM 212. *Instructor: Parry*

CHEM 311(F) PHYSICAL CHEMISTRY (3-0-3)

Introduction to the fundamental principles of physical chemistry. Includes quantum chemistry, chemical bonding, molecular spectroscopy, statistical thermodynamics, and the kinetic theory of gases. Required for chemistry and chemical physics majors. PHYS 202 and NSCI 230 recommended. Prerequisites: MATH 211 and 212, PHYS 101 and 102 (or 111 and 112), and CHEM 101-102 (or 111-112). *Instructor: Colvin*

CHEM 312(S) PHYSICAL CHEMISTRY (3-0-3)

Continuation of CHEM 311. Includes the principles of thermodynamics, statistical thermodynamics, the kinetic theory of gases, chemical kinetics and reaction dynamics. Required for chemistry and chemical physics majors. NSCI 230 recommended. Prerequisites: MATH 211 and 212, PHYS 101 and 102 (or 111 and 112), and CHEM 101-102 (or 111-112). *Instructor: Brooks*

CHEM 313(F) EXPERIMENTS IN PHYSICAL CHEMISTRY (1-4-2)

Experiments illustrating techniques employed in high-resolution optical spectroscopy, electrochemistry, calorimetry, surface-area measurements, and kinetics. Meets alternate weeks. Required for chemistry majors. NSCI 230 strongly recommended. Prerequisite: CHEM 105. Corequisite: CHEM 311. *Instructor: Brooks*

CHEM 314(S) ADVANCED INSTRUMENTAL LABORATORY (0-8-2)

Study of the principles of modern instrumental methods and their application to inorganic and physical chemistry. Required for chemistry majors. Prerequisite: CHEM 311. Corequisite: CHEM 313. *Instructor: Colvin*

CHEM 360(S) INORGANIC CHEMISTRY (3-0-3)

Survey of the periodic table, atomic and molecular structure, and bonding in covalent, ionic, and electron deficient systems, as well as thermochemical principles and experimental techniques for analysis, structure determination, and synthesis. Required for chemistry majors. Prerequisites: CHEM 211 and 213. Corequisites: CHEM 212 and 213. *Instructor: Margrave*

CHEM 401(F) ADVANCED ORGANIC CHEMISTRY (3-0-3)

Study of pericyclic reactions (Woodward-Hoffman rules), reactive intermediates, rearrangements, and stereochemistry. Includes the chemistry of carbohydrates, amino acids, peptides, and nucleic acids, as well as important reactions of organic chemistry and their mechanisms. *Instructors: Billups, Matsuda*

CHEM 403(F) ADVANCED ORGANIC LABORATORY (1-8-2)

Instruction in the techniques of modern organic chemistry. Required for chemistry majors. Prerequisites: CHEM 212 and 213-214. *Instructors: Billups, Matsuda*

CHEM 411(S) SPECTRAL METHODS IN ORGANIC CHEMISTRY (3-0-3)

Elucidation of organic structures using spectroscopic techniques. Interpretation of infrared, ultraviolet, proton and carbon nuclear magnetic resonance, and mass spectra. Prerequisite: CHEM 401. *Instructor: Engel*

CHEM 415(F) CHEMICAL KINETICS AND DYNAMICS (3-0-3)

Description and analysis of the rates of unimolecular, bimolecular, and composite chemical reactions in gas and solution phases. Includes both macroscopic kinetics and microscopic reaction dynamics. Prerequisites: CHEM 311-312. *Instructor: Curl*

CHEM 430(F) QUANTUM CHEMISTRY (3-0-3)

Study of quantum mechanical principles, atomic structure, and chemical bonding. PHYS 202 recommended. Prerequisite: CHEM 312. *Instructor: Scuseria*

CHEM 445(F) QUANTUM CHEMISTRY (3-0-3)

Study of organic reaction mechanisms. Includes kinetics, isotope effects, thermochemical group activity, substituent and medium effects, linear free energy relations, and acidity functions. Prerequisites: CHEM 311-312. Corequisite: CHEM 401. *Instructor: Engel*

CHEM 491 RESEARCH FOR UNDERGRADUATES (hours variable)

Independent research. Includes written report. Open to chemistry majors only. *Instructors: Billups, Matsuda, Parry*

CHEM 495(F) TRANSITION METAL CHEMISTRY (3-0-3)

Study of structure, bonding, and the reactivity of coordination in bioinorganic and organometallic compounds. Includes ligand field theory, electronic spectroscopy, magnetism, reaction mechanisms, and catalysis. CHEM 460 recommended. Prerequisites: CHEM 311-312. *Instructor: Barron*

CHEM 515(F) CHEMICAL KINETICS AND DYNAMICS (3-0-3)

Graduate version of CHEM 415.

CHEM 520(S) CLASSICAL AND STATISTICAL THERMODYNAMICS (3-0-3)

Review of classical thermodynamics followed by an introduction to the statistical thermodynamics, with emphasis on chemical applications. Prerequisites: CHEM 311-312 (or equivalent). *Instructor: Weisman*

CHEM 530(F) QUANTUM MECHANICS I (3-0-3)

Graduate version of CHEM 430.

CHEM 531(S) QUANTUM MECHANICS II (3-0-3)

Development of the elements and techniques of quantum mechanics with applications to atomic and molecular systems. Prerequisite: CHEM 430 or 530.

CHEM 541(F) SPECIAL TOPICS IN ORGANIC CHEMISTRY (3-0-3)

Seminar in transition metal chemistry, synthesis, photochemistry, and photophysics. Offered every other year. Usually alternates with CHEM 543.

CHEM 542(S) SPECIAL TOPICS IN ORGANIC CHEMISTRY (3-0-3)

Seminar in mechanistic and synthetic chemistry. Prerequisite: CHEM 561.

CHEM 543(S) SPECIAL TOPICS IN ORGANIC CHEMISTRY (3-0-3)

Content varies from year to year. Not offered every year.

CHEM 561(S) ADVANCED ORGANIC CHEMISTRY (3-0-3)

Study of the disconnection approach to organic synthesis, with emphasis on reactions, reagents, and mechanisms. Co-/Prerequisite: CHEM 401. *Instructor: Ciufolini*

CHEM 562(S) ADVANCED ORGANIC CHEMISTRY (3-0-3)

Continuation of CHEM 561, with emphasis on very recent advances in stereoselective synthesis.

CHEM 575(S) PHYSICAL METHODS-INORGANIC CHEMISTRY (3-0-3)

Survey of research techniques used in modern inorganic chemistry. Includes x-ray diffraction, matrix isolation, mass spectrometry, magnetism, electrochemistry, various spectroscopies (e.g., IR, Raman, UV-Vis, NMR, EPR, XPR, EXAFS, and Mossbauer), and microscopies (AFM, SEM, TEM). Open to undergraduates by special permission only. Not offered every year. *Instructor: Whitmire*

CHEM 595(F) SPECIAL TOPICS IN INORGANIC CHEMISTRY (3-0-3)

Seminar in solid-state chemistry, organometallic chemistry, bioinorganic chemistry, nuclear chemistry, or single-crystal x-ray diffraction. Open to undergraduates by special permission only. May be repeated for credit. *Instructor: Wilson*

CHEM 596 CHEMISTRY OF ELECTRONIC MATERIALS (3-0-3)

A review of the chemical processes involved in the manufacture of microelectronic chips, including crystallization, purification, oxidation, thin film methods, lithography, and ceramic processing. Usually alternates with CHEM 595. Not offered every year. Open to undergraduates by special permission only. *Instructor: Barron*

CHEM 600 INORGANIC SEMINAR (1-0-1)

Seminar on topics in current research and literature. *Instructors: Barron, Whitmire, Wilson*

CHEM 606 EFFECTIVE PRESENTATIONS FOR CHEMISTS (1-0-1)

Students learn to plan effective technical seminars with applications to chemical conferences such as the national and regional meetings of the American Chemical Society, as well as job interview presentations. Open to undergraduates by special permission only. *Instructors: Barron, Matsuda*

CHEM 611(F) HIGH-TEMPERATURE AND HIGH-PRESSURE CHEMISTRY (3-0-3)

Instruction in techniques for the generation and measurement of high temperatures and high pressure; the nature of chemical phenomena under extreme conditions and the synthesis of new materials. *Instructor: Margrave*

CHEM 630(F) MOLECULAR SPECTROSCOPY AND GROUP THEORY (3-0-3)

Study of experimental and theoretical principles of the spectroscopy of simple molecules. Includes microwave, infrared, visible, ultraviolet, and Raman spectra, with an introduction to molecular symmetry and group theory. Prerequisite: CHEM 531.

CHEM 800 GRADUATE RESEARCH (hours variable)**Chinese (CHIN)****The School of Humanities/Department of Linguistics****CHIN 101(F) BEGINNING CONVERSATIONAL CHINESE I (3-1-4)**
DISTRIBUTION COURSE: GROUP I

For students with no background in Chinese. Emphasis is on listening and speaking. The class will include games, music, videos, skits, field trips, etc., to enhance the learning experience. Upon completion of these consecutive courses, students can expect to converse in Chinese with native speakers on various subjects. Students will learn 50 characters each semester. *Instructor: Houg*

CHIN 102(S) BEGINNING CONVERSATIONAL CHINESE II (3-1-4)
DISTRIBUTION COURSE: GROUP I

Continuation of CHIN 101. *Instructor: Houg*

CHIN 201(F) BEGINNING READING AND WRITING IN CHINESE I (3-1-4)

DISTRIBUTION COURSE: GROUP I

Emphasis is on reading and writing high-frequency Chinese characters. Realia such as advertisements, letters, invitations, street signs, etc., from China, Taiwan, and Hong Kong are abundant in the textbook. Students will be coached to compose short essays in Chinese using a Chinese word processor on computer. 700 characters for recognition and 300 characters for writing during the year. Conversation skills learned in Chin 101-102 will be reinforced. Instruction mostly in Chinese—slightly slower than normal speed. Prerequisite: CHIN 102 or permission of instructor.

Instructor: Houg

CHIN 202(S) BEGINNING READING AND WRITING IN CHINESE II (3-1-4)

DISTRIBUTION COURSE: GROUP I

Continuation of CHIN 201. *Instructor: Houg*

CHIN 203(F) BEGINNING ACCELERATED CHINESE I (3-1-4)

DISTRIBUTION COURSE: GROUP I

For students with some minimal competence in spoken Chinese. Emphasis will be on oral skills and writing. Students will learn 300 characters during the year. A placement evaluation with the instructor is required for enrollment. *Instructor: Chen*

CHIN 204(S) BEGINNING ACCELERATED CHINESE II (3-1-4)

DISTRIBUTION COURSE: GROUP I

Continuation of CHIN 203. *Instructor: Chen*

CHIN 301(F) INTERMEDIATE CHINESE I (3-0-4)

DISTRIBUTION COURSE: GROUP I

Instructor: Chen

CHIN 302(S) INTERMEDIATE CHINESE II (3-0-4)

DISTRIBUTION COURSE: GROUP I

Continuation of CHIN 301. *Instructor: Chen*

CHIN 330(S) INTRODUCTION TO TRADITIONAL CHINESE POETRY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of traditional Chinese poetry and poetics, with emphasis on literary texts and theoretical essays. Includes "words and meanings," the formation and transformation of poetic genres, the rhetorical function of figurative language, allegory, poetic allusions and intertextuality, and poems both by women and in women's voices. All readings in English translation. No previous knowledge of Chinese literature or language required. Also offered as HUMA 330. *Instructor: Qian*

CHIN 332(S) CHINESE FILMS AND MODERN CHINESE LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of modern Chinese literature through the visual imagery of Chinese films. Includes an analysis using literary history and narrative structure to link film adaptations to their original texts in Chinese fiction, with emphasis on narratology and movie theory. Films, subtitled in English, shown outside of class. All readings in English translation. No previous knowledge of Chinese literature or language required. Also offered as HUMA 332. *Instructor: Qian*

CHIN 334 INTRODUCTION TO TRADITIONAL CHINESE NARRATIVE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Introduction to the basic features of traditional Chinese narrative. Includes historical records, biographies, novels, and short stories, with emphasis on analysis of narrative structure and characterization using Western as well as Chinese literary theories. All readings in English translation. No previous knowledge of Chinese literature or language required. Also offered as HUMA 334. Not offered 1997-98. *Instructor: Qian*

CHIN 335(F) INTRODUCTION TO CLASSICAL CHINESE NOVELS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Examination of the basic characteristics of classical Chinese novels primarily through five important works from the 16th to 18th centuries: *Water Margin*, *Monkey*, *Golden Lotus*, *Scholars*, and *Dream of the Red Chamber*. Includes discussion of issues in comparative narratology and their application to the Chinese case. All readings in English translation. No previous knowledge of Chinese literature or language required. Also offered as HUMA 335. *Instructor: Qian*

CHIN 401/402 CHINESE READING AND WRITING (3-0-3 each semester)
*Instructor: Houg***CHIN 403(F) READING CHINESE NEWSPAPERS (3-0-3)**

Learn newspaper reading skills, increase your vocabulary, and read about current political and social events in China and Taiwan. Prerequisite: CHIN 302 or equivalent. *Instructor: Chen*

CHIN 404(S) READING CHINESE MAGAZINES (3-0-3)

Acquire reading skills and learn aspects of current cultural life in China and Taiwan. Prerequisite: CHIN 302 or equivalent. *Instructor: Chen*

CHIN 440 THE CHINESE NOVEL: STRUCTURE AND SYMBOLISM (3-0-3)

Exploration via translation of the symbolic and structural world of the traditional Chinese novel. Includes the structural principles, symbolism, and aesthetic assumptions in China's rich literary tradition, with emphasis on the greatest of all Chinese novels, *Dream of the Red Chamber*. Not offered 1997-98. *Instructor: Chen*

Civil Engineering (CIVI)

The George R. Brown School of Engineering

CIVI 211 ENGINEERING MECHANICS (3-0-3)

Study of the equilibrium of static systems, the dynamics of a particle and particle systems, and rigid-body dynamics. Includes elements of vibrational analysis. Required for B.S.C.E. Prerequisites: PHYS 101 and MATH 101 and 102. Also offered as MECH 211.

CIVI 251(F) PLANE SURVEYING (1-3-2)

Overview of fundamental surveying principles and techniques. Required for B.S.C.E. (not required for environmental engineering option). *Instructor: Hanks*

CIVI 300(S) MECHANICS OF SOLIDS (3-0-3)

Study of the engineering properties of materials and failure theories. Includes stresses and deformations due to various loads. Required for B.S.C.E. Prerequisite: CIVI 211. *Instructor: Merwin*

CIVI 302(S) STRENGTH OF MATERIALS LABORATORY (0-3-1)

Instruction in standard tension, compression, and torsion tests of ferrous and nonferrous metals. Includes experimental techniques and the behavior of structural elements. Limited enrollment. Preference given to civil engineering majors. Required for B.S.C.E. *Instructor: Merwin*

CIVI 304(S) STRUCTURAL ANALYSIS I (3-0-3)

Analysis of statically determinate structures. Includes stability and determinacy, influence lines, moving loads, the calculation of deflections, and an introduction to the analysis of indeterminate structures. Required for B.S.C.E. Prerequisite: CIVI 211. Corequisite: CIVI 300. *Instructor: Velez*

CIVI 305(F) STRUCTURAL ANALYSIS II (3-0-3)

Study of force and displacement methods used in the analysis of indeterminate structures. Includes influence lines, energy methods, and the limit analysis of beams and frames. Required for B.S.C.E. (not required for environmental engineering option). Prerequisite: CIVI 304. *Instructor: Conte*

CIVI 306(S) STEEL DESIGN (3-0-3)

Design of steel members, connections, and assemblies. Includes the behavior of steel members in relation to design. Required for B.S.C.E. Prerequisite: CIVI 304.

CIVI 320(F) ETHICAL DECISION MAKING FOR ENGINEERS (3-0-3)

A review of ethical issues encountered in the conduct of work as a professional engineer. Impact of personal and cultural value systems on the effectiveness of individual engineers, project teams, and technical organizations employed in diverse business environments will be explored. *Instructor: Moore*

CIVI 322(S) ENGINEERING ECONOMICS AND MANAGEMENT (3-0-3)

Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are developed. *Instructor: Segner*

CIVI 363(F) APPLIED FLUID MECHANICS (3-0-3)

Study of fluid properties, fluid statics, and incompressible fluid steady flow. Includes energy and momentum equations with many applications, similitude and dimensional analysis, and viscous fluid flow in pipes and pipe networks. Required for B.S.C.E. *Instructor: Merwin*

CIVI 400(F) MECHANICS OF SOLIDS II (3-0-3)

Continuation of CIVI 300. Includes curved beams, beams on elastic foundations, the torsion of noncircular sections, energy methods, and failure modes. Required for B.S.C.E. (not required for environmental engineering option). Does not count toward graduate degree requirements in civil engineering. Prerequisite: CIVI 300. *Instructor: Merwin*

CIVI 403(S) REINFORCED CONCRETE DESIGN (3-0-3)

Study of the material properties and flexural strength of rectangular and T-sections and the strength design of beams, one-way slabs, and footings. Includes shear strength, deflections, and column design, as well as the use of handbooks and computer programs for design. Required for B.S.C.E. Prerequisite: CIVI 304. *Instructor: Durrani*

CIVI 404(S) CONCRETE LABORATORY (0-3-1)

Instruction in tests of materials and reinforced concrete members. Required for B.S.C.E. Corequisite: CIVI 403. *Instructor: Durrani*

CIVI 451(S) INTRODUCTION TO TRANSPORTATION (3-0-3)

Survey of the operational characteristics of transport modes, the elements of transportation planning, and the design of stationary elements. Required for B.S.C.E. (not required for environmental engineering option). *Instructor: Sedlak*

CIVI 464(S) HYDROLOGY AND WATERSHED ANALYSIS (3-3-4)

Study of the fundamentals of the hydrologic cycle, hydrography techniques, flood routing, and open-channel flow. Includes hydrologic design, local watershed application and lab. Required for B.S.C.E. (not required for environmental engineering option). Also offered as ENVI 412. *Instructor: Bedient*

CIVI 470(F) BASIC SOIL MECHANICS (3-3-4)

Survey of soil exploration, soil properties and behavior, soil classifications, the hydraulics of soil moisture, consolidation and settlement, strength characteristics, soil stabilization, lateral earth pressure, slope stability, and retaining wall design. Required for B.S.C.E. *Instructor: Dakoulas*

CIVI 499 SPECIAL PROBLEMS (hours variable)

Study of selected topics. Includes individual investigations, special lectures, and seminar. Offered upon mutual agreement of faculty and student.

CIVI 500(S) ADVANCED MECHANICS OF SOLIDS I (3-0-3)

General analysis of stress and infinitesimal strain, as well as linear elastic and thermo-elastic stress-strain relations. Includes the formulation and solution of boundary value problems (e.g., the torsion and flexure of cylinders, plane problems, the flexure of plates, and selected three-dimensional problems) with approximate solutions by energy methods and the finite element method. Open to graduate students (others by permission of instructor). *Instructor: Nordgren*

CIVI 501(S) ADVANCED MECHANICS OF SOLIDS II (3-0-3)

Analysis of the nonlinear behavior of elastic and inelastic solids with applications to engineering materials. Includes the nonlinear theory of rods and the stability of columns. Prerequisite: CIVI 500. *Instructor: Nordgren*

CIVI 509(S) DYNAMIC ANALYSIS OF OFFSHORE STRUCTURES (3-0-3)

Description of loads on offshore structures on both a deterministic and probabilistic basis. Includes methods for calculating structural response, using examples of drill strings, marine risers, and fixed and compliant structures. Also offered as MECH 509. Not offered every year. *Instructor: Spanos*

CIVI 512(F) ENGINEERING APPLICATIONS OF PROBABILITY (3-0-3)

Applications of probability theory and statistics in the planning, analysis, and design of civil engineering systems. Includes the probabilistic modeling of random phenomena, occurrence models and extreme value distributions, statistical inference methods, the modeling and analysis of uncertainties in engineering, and an introduction to Bayesian statistical decision theory. Prerequisite: CAAM 381 or STAT 310. *Instructor: Conte*

CIVI 513(F) THEORY OF ELASTICITY (3-0-3)

Discussion of advanced topics in the linear and nonlinear theory of elasticity. Also offered as MECH 513. Not offered every year. *Instructor: Wang*

CIVI 515(S) STRUCTURAL PLASTICITY, FATIGUE, AND FRACTURE (3-0-3)

Investigation of problems in limit analysis and design, the plastic behavior of structures, the flexure and torsion of prismatic members, fatigue failure, and the brittle fracture of structural components. Also offered as MECH 515. Not offered every year. *Instructor: Merwin*

CIVI 516(F) PLATES (3-0-3)

Introduction to the theories of plates and cylindrical shells with applications to practical problems. Not offered every year.

CIVI 519(S) SHELLS (3-0-3)

Introduction to theories of shells with applications to practical problems. Not offered every year.

CIVI 521(F) STRUCTURAL DYNAMICS I (3-0-3)

Study of the dynamics of force-excited discrete linear systems with applications to design. Open to undergraduates with permission of instructor only. *Instructor: Veletsos*

CIVI 522(S) STRUCTURAL DYNAMICS II (3-0-3)

Study of the dynamics of force-excited continuous linear systems and ground-excited linear and yielding structures. Includes the fundamentals of earthquake engineering. Prerequisite: CIVI 521. *Instructor: Veletsos*

CIVI 523(S) PROBABILISTIC STRUCTURAL DYNAMICS (3-0-3)

Introduction to probability theory and random processes. Includes the dynamic analysis of linear and nonlinear structural systems subjected to stationary and nonstationary random excitations, reliability studies related to first excursion and fatigue failures, and applications to earthquake engineering, offshore engineering, and wind engineering. Prerequisites: CIVI 521 or MECH 412 and basic knowledge of probability theory. Also offered as MECH 523. *Instructor: Conte*

CIVI 524(S) STRUCTURAL RELIABILITY THEORY AND APPLICATIONS (3-0-3)

Study of probability theory and random processes, as well as the fundamentals of structural reliability theory. Includes methods of reliability analysis, structural component and system reliability, reliability-based design codes, structural load modeling and combination for performance and safety evaluation, and the seismic risk analysis of structural systems. Prerequisite: basic knowledge of probability theory. *Instructor: Conte*

CIVI 525(F) STRUCTURAL DYNAMICS III (3-0-3)

Study of special topics in structural dynamics. Includes problems of wave propagation, the response of structures to waves, the dynamics of foundations, and soil-structure and fluid-structure interaction. Not offered every year. Prerequisite: CIVI 521. *Instructor: Veletsos*

CIVI 526(F) STRUCTURAL STABILITY (3-0-3)

Examination of stability criteria. Includes the flexural and torsional buckling of columns and frames, the lateral buckling of beams, plate buckling, the effect of imperfections on strength, beam columns, and the evaluation of design code provisions. Not offered every year. *Instructor: Jordgren*

CIVI 530(F) CONCRETE BUILDING DESIGN (3-0-3)

Design of reinforced concrete building structures and floor slab systems. Includes discussion of case histories. Prerequisite: CIVI 403. *Instructor: Gosain*

CIVI 531(F) BEHAVIOR OF REINFORCED CONCRETE MEMBERS (3-0-3)

Study of the moment-curvature relationship for beams and columns, biaxially loaded columns, slenderness effects, interaction diagrams, shear and torsion in members, shear wall-frame interaction, and behavior under large load reversals. Includes extensive use of microcomputers. Prerequisite: CIVI 403. *Instructor: Durrani*

CIVI 532(S) PRESTRESSED CONCRETE (3-0-3)

Study of prestressing techniques, prestress losses, deflections, shear and torsion, and the analysis and design of members using microcomputers. Includes composite members, continuous beams, and prestressed slabs. Prerequisite: CIVI 403. Offered every other year. *Instructor: Durrani*

CIVI 540(S) STEEL BUILDING DESIGN (3-0-3)

Exploration of practical design from conceptual stage to final analysis. Includes design parameters and serviceability limitations. Prerequisites: CIVI 305, 306, and 403. *Instructor: Banavalkar*

CIVI 550(F) PROGRAMMING CONCEPTS IN COMPUTER-AIDED ENGINEERING (3-0-3)

Provides an introduction to fundamental issues in computer-aided engineering (CAE); control of the complexity of developing large-scale CAE software; decompositions and abstraction strategies used to produce modular programs; data structures and associated algorithms used to build CAE systems; engineering information management and computer graphics. *Instructor: Turk*

CIVI 570(S) FOUNDATION ENGINEERING (3-0-3)

Geotechnical engineering applications to the analysis, design, and construction of shallow and deep foundations and earth retaining structures. Prerequisite: CIVI 470. *Instructor: Dakoulas*

CIVI 571(S) SOIL DYNAMICS (3-0-3)

Introduction to vibrations and wave propagation in elastic media and the behavior of soil subjected to dynamic and cyclic loading. Includes field and laboratory testing and engineering applications, with emphasis on earthquake engineering problems (e.g., modifications of ground shaking caused by the soil, liquefaction of sands, and machine foundations). *Instructor: Dakoulas*

CIVI 678(F) ADVANCED STOCHASTIC MECHANICS (3-0-3)

Presentation of nonlinear random vibrations, statistical linearization, ARMA filters modeling, Monte Carlo simulation, Wiener-Volterra series, time-variant structural reliability, and stochastic finite elements, with emphasis on their usefulness to aerospace, civil, marine, and mechanical applications. Prerequisites: CIVI 512, 523, or MECH 523. Also offered as MECH 678. *Instructor: Spanos*

CIVI 699 SPECIAL PROBLEMS (hours variable)

Study of selected topics. Includes individual investigations under the direction of a member of the civil engineering faculty. Offered upon mutual agreement of faculty and student.

CIVI 800 RESEARCH AND THESIS (hours variable)

Classical Studies (CLAS)

The School of Humanities/Department of Hispanic and Classical Studies

CLAS 207(F) GREEK CIVILIZATION: AN INTRODUCTION (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Overview of the literary, artistic, and intellectual monuments of classical Greek civilization from Homer and the Bronze Age through the golden age of classical Athens to the spread of Greek culture in the Hellenistic world. Includes historical background and readings in primary sources. Two lectures and one discussion a week. Also offered as HIST 207. *Instructor: Yunis*

CLAS 208(S) ROMAN CIVILIZATION (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Survey of various aspects of Roman civilization. Includes the rise of Christianity, political and social history, art and architecture, religion, philosophy, and literature. Not offered 1997-98. *Instructor: Wallace*

CLAS 222(S) PERSPECTIVES ON GREEK TRAGEDY (3-0-3)

Introduction to Greek tragedy, with emphasis on the performance culture of democratic Athens, contemporary philosophical issues, and the Greek traditions of poetry and myth. All plays in English translation. Not offered 1997-98. *Instructor: Mackie*

CLAS 315(S) SOCRATES: THE MAN AND HIS PHILOSOPHY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Appraisal of Socrates' life, thought, and achievements. Includes extensive readings in Plato's Socratic dialogues, especially the *Gorgias* and *Protagoras*. Not offered 1997-98. *Instructor: Yunis*

CLAS 316(S) DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

The course considers the following questions: How and why did the Greeks invent democracy? What kind of democracy was it, how did it work, and how does it differ from modern democracy? How successful was Greek democracy? How did this new political system affect the political thought of Thucydides, Plato, and Aristotle? How was democracy reflected in contemporary arts such as tragedy, comedy, and architecture? What is the legacy of Greek democracy? Based on primary sources. *Instructor: Yunis*

CLAS 322(S) WOMEN IN GREECE AND ROME (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Survey of the depiction of women in Greek and Roman mythology, literature, and art. Includes a study of the lives of Greek and Roman women as evidenced by archaeological as well as literary materials. Also offered as HIST 324. *Instructor: Wallace*

CLAS 335(S) CLASSICAL MYTHOLOGY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Introduction to the Greek myths, their form and function in ancient society, and their afterlife in modern European literature. Includes discussion of a variety of theoretical approaches to myth. All works in English translation. *Instructor: Beck*

CLAS 351(S) THE DEATH OF EPIC (3-0-3)

Comparative analysis of epic narrative and epic themes in ancient, medieval, and modern literature and film. All works in English translation. Not offered 1997-98. *Instructor: Mackie*

CLAS 352(S) PERICLEAN ATHENS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Close examination of what was unique about Athens during the age of Pericles. Includes the Athenian empire and democracy, the crisis of the Peloponnesian War, the influence of the Sophists, social crises as reflected in tragedy and comedy, and the life and trial of Socrates. Not offered 1997-98. *Instructor: Yunis*

CLAS 491(F) SPECIAL TOPICS (3-0-3 each semester)**CLAS 492(S)**

Independent work. Open to qualified juniors and seniors.

Computer Science (COMP)

The George R. Brown School of Engineering

Enrollment in courses at the 300 and 400 level may be restricted; enrollment in courses at the 500 level and above requires the permission of the instructor.

COMP 100 INTRODUCTION TO COMPUTING AND INFORMATION SYSTEMS (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Introduction to computer organization, operating systems, programming languages, artificial intelligence, and programming. Open to nonscience and nonengineering students. May not be taken for credit after any other programming course.

COMP 200(S) ELEMENTS OF COMPUTER SCIENCE (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Broad introduction to major topics in computer science. Includes algorithms, mathematical models of computation, machine organization and design, programming languages, communication, and artificial intelligence. Open to nonscience and nonengineering students.

COMP 210 INTRODUCTION TO PRINCIPLES OF SCIENTIFIC COMPUTATION (3-3-4)**DISTRIBUTION COURSE: GROUP III**

Introduction to the principles of computer programming. Includes functional programming, data abstraction, procedural abstraction, reduction rules, use of control and state, object-oriented programming, program optimization, algorithm efficiency. Students will learn the practical skills required to write and modify programs. Laboratory assignments use Scheme and Java. May not receive credit for COMP 211 after taking COMP 210. Required for computer science majors.

COMP 211(F) INTRODUCTION TO PROGRAMMING (3 to 6 hours credit)

DISTRIBUTION COURSE: GROUP III

No longer offered. Remains as a course number for awarding transfer and advanced placement credit. Introduction to programming using Pascal. Includes problem solving and algorithms, elementary data structures, procedures and functions, and debugging. May use either COMP 211 or 212, but not both, to satisfy university distribution requirements.

COMP 212 INTERMEDIATE PROGRAMMING (3-3-4)

Study of programming methodology, problem solving, recursion, and data structures. Includes an introduction to the analysis of algorithms and sorting techniques. May use either COMP 211 or 212, but not both, to satisfy university distribution requirements. Required for computer science majors. Prerequisite: COMP 210.

COMP 240(F) THE AGE OF INTELLIGENT MACHINES (3-0-3)

DISTRIBUTION COURSE: GROUP III

Exploration of problems in creating minds for computers, commonly known as artificial intelligence. Includes the history and accomplishments of artificial intelligence, with approaches to intelligence and mind through readings drawn from logic, philosophy, religion, psychology, linguistics, neuroscience, and science fiction.

COMP 280(F) MATHEMATICS OF COMPUTER SCIENCE (3-0-3)

Study of mathematical induction, recursive definitions and recurrence equations, finite state machines, computability, and logic. Required for computer science majors. Prerequisites: MATH 102 and COMP 210.

COMP 290 COMPUTER SCIENCE PROJECTS (1 to 4 hours credit)

Theoretical and experimental investigations under staff direction. Prerequisite: permission of department.

COMP 311(S) PROGRAMMING LANGUAGES (3-3-4)

Study of the design, definition, and abstract implementation of programming languages. Includes methods for precisely specifying syntax and semantics. Required for computer science majors; may substitute COMP 412. Prerequisite: COMP 210. Corequisite: COMP 280.

COMP 314(F) APPLIED ALGORITHMS AND DATA STRUCTURES (3-3-4)

Design and analysis of computer algorithms and data structures useful for applied problems. Includes lab assignments using these techniques in conjunction with advanced programming methods. Required for computer science majors. Prerequisites: COMP 212 and 280. Also offered as ELEC 322.

COMP 320(S) INTRODUCTION TO COMPUTER ORGANIZATION (3-3-4)

Survey of basic computer architecture and assembly language programming. Includes system software, loaders and assemblers, input-output devices, and programming. Required for computer science majors. Prerequisite: COMP 212.

COMP 360(S) INTRODUCTION TO COMPUTER GRAPHICS (3-3-4)

Survey of two-dimensional graphics techniques (e.g., fast line and curve drawing and polygon filling) and three-dimensional graphics problems (e.g., the representation of solids, shading, and hidden surface elimination). Includes fractals and graphics standards. Prerequisite: COMP 212. Not offered every year.

COMP 390 COMPUTER SCIENCE PROJECTS (1 to 4 hours credit)

See COMP 290.

COMP 408(S) APPLIED COMPUTER-AIDED VERIFICATION (3-0-3)

Techniques for specifying, modeling, and verifying hardware and software systems. Emphasis on tools, their applications, and their limitations. Prerequisites: COMP 280, 314, and 320.

COMP 409(F) LOGIC IN COMPUTER SCIENCE (3-0-3)

A thorough introduction to mathematical logic. Covers in depth the topics of syntax, semantics, decision procedures, formal systems, and definability for both propositional and first-order logic, all from the perspective of computer science. The goal is to prepare students to use logic as a formal tool in computer science. Prerequisites: COMP 210 and 280.

COMP 410(F) SOFTWARE ENGINEERING METHODOLOGY (3-3-4)

Study of software design for effective implementation and maintenance, using techniques for program specification and correctness proofs. Includes case studies examining what works, what doesn't, and why, as well as programming assignments involving maintenance exercises and team projects. Prerequisites: COMP 210, 212, and 314.

COMP 411(S) ADVANCED PROGRAMMING LANGUAGES (3-0-3)

Study of the design, definition, and abstract implementation of programming languages. Includes methods for precisely specifying syntax and semantics. Prerequisites: COMP 210, 280, 311, and 320.

COMP 412(F) COMPILER CONSTRUCTION (3-3-4)

Exploration of the design of programming language translators. Includes parsing, run-time storage management, error recovery, and code generation and optimization. Prerequisite: COMP 314.

COMP 421(S) OPERATING SYSTEMS AND CONCURRENT PROGRAMMING (3-3-4)

Introduction to the design, construction, and analysis of concurrent programs, with emphasis on operating systems. Includes filing systems, schedulers, and memory allocators, with specific attention to process synchronization and communication within concurrent programs. Required for computer science majors. Prerequisites: COMP 212 and 320. Also offered as ELEC 421.

COMP 422(F) PARALLEL COMPUTING (3-3-4)

Examination of the need for parallel computing, models for parallel computations, basic algorithms on PRAM machines, architectures of parallel computing, mapping and scheduling in parallel computers, and program design for parallel computations. Includes an extensive programming component. Prerequisites: COMP 212 and 320.

COMP 425(F) COMPUTER SYSTEMS ARCHITECTURE (3-3-4)

Study of advanced uniprocessor system architecture and the basics of parallel architectures. Includes pipelining (e.g., dynamic scheduling and precise interrupt handling), techniques for exploiting instruction-level parallelism (e.g., superscalar and VLI architecture), case studies of recent high-performance microprocessors, vector processors, memory systems design (e.g., techniques to improve cache performance, virtual memory systems, and main memory enhancements), I/O systems such as disk arrays and graphical interfaces, and an overview of parallel computers. Prerequisites: ELEC 320/COMP 320 and ELEC 326. Also offered as ELEC 425. *Instructor: Adve*

COMP 430(F) INTRODUCTION TO DATABASE SYSTEMS (3-3-4)

Survey of database system design and implementation. Includes physical data organization, relational databases, object-oriented databases, query languages, query optimization, transaction processing, concurrency control, and recovery. Prerequisites: COMP 212 and 314.

COMP 440(S) ARTIFICIAL INTELLIGENCE (3-3-4)

Study of methods for designing and analyzing intelligent agents (e.g., embedded control systems that achieve specific performance objectives within limited resources), using mathematical tools from computer science, logic, probability theory, and economics, as well as relevant literature in neurobiology and psychology. Includes construction of, and experimentation with, software simulations of complex discrete control systems. Optional module involves hardware implementation of an insect robot. Prerequisite: COMP 210. Also offered as ELEC 440.

COMP 441(S) APPLIED ARTIFICIAL INTELLIGENCE PROJECTS (3-3-4)

Seminar on the development of knowledge-based (expert) systems. Includes reading original papers on aspects of knowledge engineering and on expert systems development and working as teams to develop a knowledge-based system (e.g., in medical decision making, molecular biology, and banking), using an expert systems tool. Prerequisite: COMP 440.

COMP 450(S) ALGORITHMIC ROBOTICS (3-3-4)

An introduction to computing object motion in application domains such as robotics, manufacturing, animated graphics, and drug design. Includes basic path planning, uncertainty, moving obstacles, and kinematic constraints. Prerequisites: COMP 212 and 314.

COMP 461(S) COMPUTER-AIDED GEOMETRIC DESIGN (3-0-3)

Examination of the fundamental representations and algorithms for curves and surfaces in computer-aided geometric and hermite interpolation. Includes Bezier and B-spline approximation, geometric continuity and Beta-splines, and recursive algorithms for evaluation, differentiation, subdivision, and knot insertion, as well as blossoming and polar forms and Descartes's law of signs and the variation diminishing property. Prerequisite: MSCI 353.

COMP 480(S) CONCRETE MATHEMATICS (3-0-3)

Study of discrete and combinatorial mathematics. Includes sums and products, integer functions, elementary number theory, factorials, binomial coefficients, harmonic numbers, Fibonacci numbers, generating functions, and asymptotic representations, with applications to advanced algorithm analysis. Prerequisite: COMP 314. Not offered every year.

COMP 481(F) AUTOMATA, FORMAL LANGUAGES, AND COMPUTABILITY (3-0-3)

Exploration of finite automata, regular expressions, regular languages, pushdown automata, context-free languages, Turing machines, recursive languages, computability, and solvability. Required for computer science majors; may substitute COMP 482. Prerequisite: COMP 314.

COMP 482(S) DESIGN AND ANALYSIS OF ALGORITHMS (3-0-3)

Study of methods for designing and analyzing computer algorithms and data structures, with emphasis on the theoretical and mathematical aspects of algorithms and data structures. Prerequisite: COMP 314.

COMP 490 COMPUTER SCIENCE PROJECTS (1 to 9 hours credit)

See COMP 290.

COMP 491 COMPUTER SCIENCE TEACHING (3-0-3)

Combined in-service teaching and seminar. Prerequisite: permission of department.

COMP 511(S) DENOTATIONAL SEMANTICS OF PROGRAMMING LANGUAGES (3-0-3)

Study of the operational and denotational semantics of programming languages. Prerequisites: COMP 311, 411, and 481.

COMP 512(F) ADVANCED COMPILER CONSTRUCTION (3-3-4)

Exploration of advanced topics in the design and implementation of programming language translators. Includes data flow analysis and optimization, code generation and register allocation, attribute grammars and their evaluation, translation within programming environments, and the implementation of advanced language features. Prerequisite: COMP 412.

COMP 513(F) IMPLEMENTATION OF PROGRAMMING LANGUAGES (3-3-4)

Study of automatic storage management, the representation of function closures and continuations, the implementation of logic programming, type checking in the presence of polymorphic typing and overloading, and compiler generation from formal semantics. Not offered every year.

COMP 514(F) PROGRAMMING LOGICS (3-0-3)

Study of formal systems for specifying and verifying properties of programs. Includes first-order predicate logic, models of programming languages, and deductive systems for proving properties of programs. Not offered every year.

COMP 515(F) ADVANCED COMPILATION FOR VECTOR AND PARALLEL PROCESSORS (3-0-3)

Instruction in advanced compilation techniques for vector and parallel computer systems. Includes the analysis of program dependence, program transformations to enhance parallelism, compiler management of the memory hierarchy, interprocedural data flow analysis, and parallel debugging.

COMP 519 TOPICS IN PROGRAMMING LANGUAGE (3-0-3)

Content varies from year to year.

COMP 520(F) DISTRIBUTED SYSTEMS (3-3-4)

Study of distributed systems (e.g., workstations, local area networks, and server machines). Includes multiprocess structuring and interprocess communication, file access and memory management, user interfaces (e.g., window systems and command interpreters), and case studies of selected distributed systems, with emphasis on performance aspects of system software design. Prerequisites: COMP 421 and 425. Also offered as ELEC 520.

COMP 525(S) ADVANCED COMPUTER ARCHITECTURE (3-0-3)

Design of parallel architectures such as shared memory MIMD (multiple-instruction-multiple-data), message passing MIMD, and SIMD (single-instruction-multiple-data) architectures. Includes interconnection networks, techniques to reduce and tolerate communication latency (e.g., cache coherence protocols, memory consistency models, and multithreaded and data flow architectures), synchronization, and software involvement for improving performance, as well as case studies of parallel machines. Prerequisite: ELEC 425. Also offered as ELEC 525. *Instructor: Adve*

COMP 526(S) COMPUTER NETWORKS-DESIGN AND ANALYSIS (3-0-3)

Design and comparison of computer networks. Includes transmission media, data enclosing, error control, and techniques for performance analysis, as well as connectivity and reliability, capacity assignment, and network topologies, with emphasis on local area networks (e.g., rings, buses, and contention networks). Prerequisite: ELEC 428. Also offered as ELEC 526. *Instructor: Sinclair*

COMP 529(S) COMPUTER NETWORKS-ARCHITECTURE AND PROTOCOL (3-3-4)

Introduction to computer networks and computer communication. Includes the design of protocols for error recovery, reliable delivery, routing, and congestion control, as well as store-and-forward networks, satellite networks, local area networks, and locally distributed systems, using case studies of networks, protocols, and protocol families, with emphasis on software design issues in computer communication. Prerequisites: STAT 310 and COMP 421. Also offered as ELEC 529.

COMP 530 DATABASE SYSTEM (3-0-3)

Survey of database system implementation and design techniques. Includes file structures and relational, hierarchical, and network schemes, as well as query languages, protection, and concurrent access. Prerequisite: COMP 430. Not offered every year.

COMP 540(F) ADAPTIVE SYSTEMS (3-3-4)

Study of multidisciplinary methods of designing and analyzing adaptive systems. Includes discussion of recent research in the areas of planning, scheduling, and control as well as machine learning. Prerequisites: COMP 440 or permission of instructor.

COMP 541(S) KNOWLEDGE-BASED SYSTEMS (3-0-3)

Study of the uses of artificial intelligence to augment human capabilities. Includes decision support systems and expert systems, with emphasis on applications in complex organizational settings, as well as the conceptual and technical limitations of existing expert systems technology with possible remedies. Prerequisite: COMP 440.

COMP 561(F) GEOMETRIC MODELING (3-0-3)

Exploration of curves and surfaces (e.g., parametric form, implicit form, and conversion between forms), the representation of solids (e.g., wireframes, octrees, boundary representations, and constructive solid geometry), and applications (e.g., graphics, motion planning, simulation, and finite element mesh generation). Prerequisite: COMP 314.

COMP 563(F) ALGORITHMIC ALGEBRAIC GEOMETRY (3-0-3)

Study of coordinate systems, commutative algebra, algebraic curves and surfaces, and relational maps. Prerequisite: permission of instructor.

COMP 581 THEORY OF COMPUTATION (3-0-3)

Study of computational complexity, abstract complexity, NP- and PSPACE-completeness, polynomial hierarchy, cryptography, Kolmogorov complexity, parallel algorithms, and random algorithms. Prerequisite: COMP 481.

COMP 582 ADVANCED ALGORITHMS (3-0-3)

Design and analysis of efficient computer algorithms and data structures. Includes lower bound techniques, seminumerical algorithms, and fast Fourier transforms. Prerequisite: COMP 481.

COMP 583(S) PARALLEL ALGORITHMS AND ARCHITECTURE (3-0-3)

Study of parallel architectures (e.g., arrays, trees, hypercubes, and shared memory), the structure and relation between architectures, and parallel time, work, and efficiency. Includes the design and analysis of parallel algorithms, VLSI complexity, area-time tradeoffs, and area-efficient VLSI networks. Prerequisite: ELEC 322. Also offered as ELEC 519. *Instructor: Varman*

COMP 584(F) COMPUTATIONAL GEOMETRY (3-0-3)

Study of point location, range searching, convex hulls, proximity algorithms, intersections, and the geometry of rectangles.

COMP 589(F) TOPICS IN THEORY OF COMPUTATION (3-0-3)**COMP 590 COMPUTER SCIENCE PROJECTS (1 to 9 hours credit)**

See COMP 290.

COMP 600 GRADUATE SEMINAR (1-0-1)**COMP 601(F) RESEARCH ETHICS SEMINAR (2-0-2)**

This case-based course focuses on ethical issues commonly encountered in the preparation, conduct, and reporting of scientific research. Includes peer review, conducting research, authorship, research fraud, and conflicts of interest. (Bioethics issues are not covered in this course.) Emphasis is on interactive discussion. Also offered as CAAM 601.

COMP 607(F) AUTOMATED PROGRAM VERIFICATION (1-0-1)

Study of methods, tools, and theories for the computer-aided verification of concurrent systems. Includes verification and validation tools for hardware and software systems, verification and validation methods based on model checking and theorem proving, automata-based methods, and complexity and efficiency issues in automatic verification. Prerequisite: COMP 409. *Instructor: Vardi*

COMP 609 UNIVERSAL ALGEBRA (1-0-1)

Study of elements of universal algebra (e.g., isomorphic algebras, quotients, direct products, and varieties). Includes Boolean algebras (e.g., rings, filters, ideals, Stone duality, connection to model theory, and logic). Prerequisites: MATH 463 and COMP 409.

COMP 610 GRADUATE SEMINAR IN PROGRAMMING LANGUAGES (1-0-1)

Discussion of programming language semantics in computer science.

COMP 612 GRADUATE SEMINAR IN COMPILER CONSTRUCTION (2-0-2)

Seminar on topics in the construction of programming language translators. Prerequisite: COMP 412. Not offered every year.

COMP 613(F) GRADUATE SEMINAR IN ADVANCED LANGUAGE IMPLEMENTATION (3-0-3)

Seminar on topics in advanced language implementation. Prerequisites: COMP 311 and 412.

COMP 615(F) GRADUATE SEMINAR IN PARALLEL PROGRAMMING SYSTEMS (2-0-2)

Seminar on topics in parallel programming environments and compilers for parallel computers.

COMP 620 GRADUATE SEMINAR IN DISTRIBUTED COMPUTATION (1-0-1)

Content varies from year to year. Prerequisite: COMP 520.

COMP 661 GRADUATE SEMINAR IN GEOMETRIC COMPUTATION (1-0-1)**COMP 680 GRADUATE SEMINAR IN COMPUTABILITY THEORY (1-0-1)**

Content varies from year to year. Prerequisites: COMP 581 and 582.

COMP 682 GRADUATE SEMINAR IN GRAPH ALGORITHMS (3-0-3)

Seminar in advanced graph algorithms, separator theorems, and planar graphs. Prerequisite: COMP 582.

COMP 690 RESEARCH AND THESIS (hours variable)**COMP 800 DOCTORAL RESEARCH (hours variable)**

Cognitive Sciences (CSCI)

The School of Social Sciences

CSCI 390 SUPERVISED RESEARCH IN COGNITIVE SCIENCE (1-9-3)

Supervised research on topics relevant to cognitive sciences. Open only to cognitive sciences majors. Prerequisite: permission of instructor.

CSCI 410(S) COMPUTATIONAL MODELING OF COGNITIVE PROCESSES (3-1-3)

Survey of computational approaches to modeling cognitive processes, with emphasis on recent connectionist models. Includes evaluation of existing models and "hands-on" modeling experience. Prerequisite: COMP 210.

CSCI 420(F) BRAIN AND BEHAVIOR (3-0-3)

Examination of the neural basis of higher mental functions in humans (e.g., perception, attention, memory, motor skill, and language) and discussion of claims and controversies arising from neuropsychology. Includes basic neuroanatomy, experimental and clinical investigative methods, and the historical and philosophical context of contemporary neuroscience. Prerequisite: PSYC 362 or permission of instructor.

CSCI 481(F) HONORS PROJECT (3-0-3 each semester)

CSCI 482(S)

Independent senior research project under the guidance of one or more faculty members in the cognitive sciences program. The project will culminate in an oral presentation and final written project report by the student.

Economics (ECON)

The School of Social Sciences

Specified courses are offered in the summer through the School of Continuing Studies.

ECON 211 PRINCIPLES OF ECONOMICS I (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to the nature of economics. Includes price systems, household decisions, cost and supply, marginal productivity and capital theory, industrial organization and control, economic efficiency, externalities, and public goods. Required for economics and mathematical economic analysis majors. Also offered in summer.

ECON 212 PRINCIPLES OF ECONOMICS II (3-0-3)

DISTRIBUTION COURSE: GROUP II

Includes the measurement and determination of national income; money, banking, and fiscal policy; business cycles, unemployment, and inflation; international trade and balance of payments; and other contemporary economic problems. Required for economics and mathematical economic analysis majors. Prerequisite: ECON 211. Also offered in summer.

ECON 301 HISTORY OF ECONOMIC ANALYSIS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of the fundamental ideas of great economic thinkers from Plato to the present. Prerequisite: ECON 211. Not offered every year.

ECON 355 MONEY AND BANKING (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of demand and supply of money and other financial assets. Includes American and international institutional trends and reforms. Prerequisites: ECON 211 and 212. *Instructor: Smith*

ECON 370 MICROECONOMIC THEORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Intermediate-level analysis of markets, firms, households, income distribution, and general equilibrium. Required for economics majors; may substitute ECON 372, but may take only one for credit. Prerequisite: ECON 211. Also offered in summer under Continuing Studies. *Instructor: Ohno*

ECON 372(F) MATHEMATICAL MICROECONOMICS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Mathematical approach to microeconomic theory. Recommended for engineering and science students. Required for mathematical economic analysis majors. May take only one of ECON 370 or 372 for credit. Prerequisites: ECON 211 and MATH 101 and 102. *Instructor: J. Brown*

ECON 375 MACROECONOMIC THEORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Intermediate-level analysis of the relationships between income levels, employment, interest, investment, consumption, and government spending. Required for economics and mathematical economic analysis majors. Prerequisites: ECON 211-212. Also offered in summer. *Instructor: B. Brown*

ECON 382 ELEMENTS OF STATISTICAL METHODS (3-0-3)

Study of probability theory and the central concepts and methods of statistics with applications to economics, marketing, and finance. Required for mathematical economic analysis majors; may substitute STAT 410 or 431. Prerequisites: ECON 211 and MATH 102. Also offered as STAT 310.

ECON 400(S) ECONOMETRICS (3-0-3)

Survey of estimation and forecasting models. Includes multiple regression time series, contingency table analysis, and Bayesian inference. Required for mathematical economic analysis majors. Prerequisite: ECON 382 (STAT 310) or STAT 381. Also offered as STAT 400. *Instructor: Chang*

ECON 403/404 SENIOR INDEPENDENT RESEARCH (3-0-3 each semester)

Independent research project for seniors on an approved topic of their choice. Prerequisite: permission of instructor. *Instructor: Smith*

ECON 415(F) HUMAN RESOURCES, WAGES, AND WELFARE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of labor markets and wage determination, with emphasis on "investment in human capital" through education, training, and health services. Prerequisite: ECON 211. *Instructor: J. Brown*

ECON 416 ECONOMIC HISTORY OF THE U.S., 1700-1945 (3-0-3)

Overview of U.S. economic history from the colonial period to the end of World War II, with emphasis on trends in per capita income and forces behind those trends. Prerequisite: ECON 211. Not offered every year.

ECON 417 COMPARATIVE HISTORY OF INDUSTRIALIZATION (3-0-3)

Comparative historical analysis of the industrialization of Western Europe, the U.S., and Russia from the 18th century to World War I. Prerequisite: ECON 211. Not offered every year.

ECON 420(F) INTERNATIONAL ECONOMICS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of the economic relationships between countries. Includes trade theory, tariffs, and other trade restrictions; international finance; trade and development; and current policy issues. Prerequisites: ECON 211, 212, and 370. *Instructor: Smith*

ECON 421(S) INTERNATIONAL FINANCE (3-0-3)

Analysis of foreign exchange, international capital markets and linkages between exchange rates, interest rates, and prices. Includes an overview of historical and institutional developments and current policy issues. Prerequisites: ECON 370 and 375 and STAT 280 or ECON 382. Not offered every year.

ECON 430(F) COMPARATIVE ECONOMIC SYSTEMS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Analysis of the operation and institutional characteristics of various economies, using theoretical models of different economic systems. Includes the U.S., Japan, and other countries selected from Europe and Asia, with discussion of problems created by the transition of former planned economies to market systems. Not offered every year.

ECON 435(F) INDUSTRIAL ORGANIZATION (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of market structure, concentration, barriers to entry, and oligopoly pricing. Includes the application of micro theory to industry problems. Prerequisites: ECON 211 and MATH 101 and 102 or permission of instructor. Not offered every year.

ECON 436 GOVERNMENT REGULATION OF BUSINESS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Analysis of governmental regulatory activities under antitrust laws and in such regulated industries as communications, energy, and transportation. ECON 370 and 435 recommended. Prerequisite: ECON 211. *Instructor: Chae*

ECON 438(F) ECONOMICS OF THE LAW I (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of the role of economics in understanding the legal system. Includes applications to contracts, property, rights, and torts. Prerequisites: ECON 211 and 370 or permission of instructor. *Instructor: Soligo*

ECON 439(S) ECONOMICS OF THE LAW II (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of the role of economics in understanding the legal system. Includes applications to financial markets, insurance, discrimination, and constitutional issues. May take ECON 439 without taking ECON 438, but ECON 438 recommended. Prerequisites: ECON 211 and 370 or permission of instructor. *Instructor: Brito*

ECON 440(F) ECONOMICS OF UNCERTAINTY (3-0-3)

Study of decision making under uncertainty, with applications to the choice of financial assets, operation of insurance markets, and microeconomic foundations of macroeconomics. Prerequisites: calculus and algebra, ECON 211, 212, and 372, MATH 212, and some familiarity with probability theory, e.g., ECON 382 (STAT 310). Not offered every year. *Instructor: Hartley*

ECON 445(S) MANAGERIAL ECONOMICS (3-0-3)

Application of economics to decision making within the firm. Includes organization theory, cost, pricing, and problems of control. ECON 212 recommended. Prerequisite: ECON 211. *Instructor: Sickles*

ECON 448 CORPORATION FINANCE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of financial analysis, planning, and control in modern corporations. Includes valuation, cost and allocation of capital, and capital markets. Prerequisites: ECON 211 and ACCO 305. *Instructor: Hartley*

ECON 450 WORLD ECONOMICS AND SOCIAL DEVELOPMENT (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examines past and future development in advanced and poor countries, emphasizing resources, population, entrepreneurship, education, and planning. Prerequisite: ECON 211 and 212. Not offered every year.

ECON 451(S) THE POLITICAL ECONOMY OF LATIN AMERICA (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of economic and political development, as well as current policy, in contemporary Latin America. Includes a comparative analysis of selected countries, with emphasis on the interaction between public policies and economic outcomes. Prerequisite: ECON 211. *Instructor: Soligo*

ECON 455(S) MONEY AND FINANCIAL MARKETS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of the determinants of demand and supply of money, bonds, stocks, and other financial assets. Includes financial intermediaries, monetary policy, inflation, and international linkages among financial markets. Prerequisites: ECON 375 and MATH 101 and 102 (or equivalents). *Instructor: Bryant*

ECON 461 URBAN ECONOMICS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Economic analysis of the development and problems of urban areas, with emphasis on current policy issues. Prerequisite: ECON 211 or permission of instructor. Not offered every year.

ECON 471(F) LINEAR PROGRAMMING (3-0-3)

Formulation of managerial and technical problems. Includes the simplex method, the revised simplex method, duality theory and its applications, transportation problems, and decomposition techniques. Also offered as CAAM 471.

ECON 472(S) INTRODUCTION TO GAME THEORY (3-0-3)

Study of solution concepts for different games (e.g., strategic form game, coalition form game, and extensive form game). Includes elementary application to economics and political science. *Instructor: Chae*

ECON 475(S) INTEGER AND COMBINATORIAL OPTIMIZATION (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Modeling and solving of optimization problems with discrete components. Includes graphs and networks, network flow problems, minimum spanning trees, basic polyhedral theory, standard problems (e.g., the knapsack problem, the plant location problem, and the set packing problem), computational complexity, branch and bound, cutting planes, Lagrangian relaxation, and Bender's decomposition. Prerequisite: ECON 471 or CAAM 471. Also offered as CAAM 475.

ECON 476(S) OPERATIONS RESEARCH-STOCHASTIC MODELS (3-0-3)

Study of probability and decisions, random selection, Markov chains and decision processes, waiting lines, and martingale models. Prerequisite: CAAM 381 or STAT 310. Also offered as CAAM 476. *Instructor: Pfeiffer*

ECON 477 MATHEMATICAL STRUCTURE OF ECONOMIC THEORY (3-0-3)

Exploration of competitive economics from a mathematical perspective, unifying calculus, matrix algebra, and set-theoretic approaches. Includes theories of household and firm, including production models. Prerequisites: ECON 211, MATH 212, and CAAM 310. Also offered as CAAM 477. Not offered every year.

ECON 478 ECONOMIC APPLICATIONS OF MATHEMATICAL PROGRAMMING (3-0-3)

Study of activity analysis, computational general equilibrium and intertemporal optimization, market games, peak load, and public good pricing. Prerequisites: ECON 471 or CAAM 471 and CAAM 461. Not offered every year.

ECON 479 OPERATIONS RESEARCH-ELEMENTARY DISCRETE OPTIMIZATION (3-0-3)

Elementary treatment of ill-behaved optimization problems. Includes discrete dynamic programming and integer programming, with emphasis on theory, formulation, and computational methods. Prerequisite: ECON 471 or CAAM 471. Not offered every year.

ECON 480 ENVIRONMENTAL AND ENERGY ECONOMICS (3-0-3)

Analysis of environmental problems, using economic theories of externalities and common property resources. Includes regulation, taxes and subsidies, transferable pollution rights, and legal solutions to environmental problems, as well as alternative energy sources and the pricing of depletable energy resources. Prerequisite: ECON 211. *Instructors: Blackburn, Mieszkowski*

ECON 483(F) PUBLIC FINANCE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of tax and expenditure policies at federal, state, and local levels, with emphasis on resource allocation and equity. ECON 370 recommended. Prerequisite: ECON 211. *Instructor: Zodrow*

ECON 485/486 CONTEMPORARY ECONOMIC ISSUES (3-0-3 each semester)

Analysis of urgent and significant economic problems, with emphasis on the evaluation of policy remedies. Content varies from year to year. Not offered every year.

ECON 495 SENIOR SEMINAR (3-0-3)

Comprehensive analysis of economic issues related to a specific topic, which varies from year to year. Not offered every year.

ECON 500 M.A. THESIS RESEARCH (hours variable)

Research on an approved topic in partial fulfillment of the requirements for the master's degree. *Instructor: Zodrow*

ECON 501(F) MICROECONOMIC THEORY I (3-6-5)

Study of the theory of the firm, the theory of consumer behavior, duopoly, bilateral monopoly, imperfect competition, capital theory, and the theory of income distribution. *Instructor: J. Brown*

ECON 502(F) MACROECONOMICS/MONETARY THEORY I (3-6-5)

Study of the macroeconomic theory of output, consumption, investment, interest rates, inflation, and employment. *Instructor: Bryant*

ECON 504(F) ADVANCED ECONOMIC STATISTICS (3-6-5)

Instruction in statistical inference and the testing of hypotheses. Includes multiple and partial correlation analysis and analysis of variance and regression. Also offered as STAT 604. *Instructor: Chang*

ECON 505(S) MACROECONOMICS/MONETARY THEORY II (3-6-5)

Detailed discussion of selected macroeconomic and monetary topics. *Instructor: Hartley*

ECON 506(F) TOPICS IN MACROECONOMICS/MONETARY THEORY (3-6-5)

Discussion of selected topics of current interest. Introduces students to active research issues and methods of the neoclassical school. *Instructor: Bryant*

ECON 507(F) MATHEMATICAL ECONOMICS I (4-0-5)

Study of the theory of household or firm, activity analysis, set theory, matrix algebra, vector calculus, metric spaces, separation theory, and constrained optimization.

ECON 508(S) MICROECONOMIC THEORY II (4-0-5)

Continuation of ECON 501. Includes the set-theoretic approach to general equilibrium, aggregate linear and nonlinear production models, existence, stability, and optimality. *Instructor: Dudey*

ECON 510(S) ECONOMETRICS I (3-6-5)

Study of estimation and inference in single equation regression models, multicollinearity, autocorrelated and heteroskedastic disturbances, distributed lags, asymptotic theory, and maximum likelihood techniques, with emphasis on the ability to analyze the literature critically. Prerequisite: ECON 504. Also offered as STAT 610. *Instructor: B. Brown*

ECON 511(F) ECONOMETRICS II (3-6-5)

Continuation of ECON 510. Includes linear and nonlinear simultaneous equations estimation, qualitative and categorical dependent variables models, and duration analysis, with applied exercises using SAS and the Wharton Quarterly Econometric Model. Also offered as STAT 611. Prerequisite: ECON 510. *Instructor: Sickles*

ECON 512(F) INTERNATIONAL TRADE THEORY (3-6-5)

Exploration of classical, neoclassical, and modern trade theory. Includes welfare aspects of trade such as the theory of commercial policy, with emphasis on applications. *Instructor: Ohno*

ECON 514(F) INDUSTRIAL ORGANIZATIONS AND CONTROL (3-6-5)

Study of industrial markets and public policy.

ECON 515(S) LABOR ECONOMICS (3-6-5)

Exploration of the economics of the labor market and the economic implications of trade unions, with emphasis on major public policy issues. Not offered every year. *Instructor: J. Brown*

ECON 516 ECONOMIC HISTORY AND DEVELOPMENT (3-6-5)

Historical analysis of the economic growth and industrialization of the U.S., Western Europe, and Russia in the last 150 years, with emphasis on conditions that favored or retarded growth. Not offered every year.

ECON 517 HISTORY OF ECONOMIC ANALYSIS (3-6-5)

Exploration of the development of economic analysis from the scholastics to the neoclassical school. Not offered every year.

ECON 518(S) INTERNATIONAL MACROECONOMICS (3-6-5)

Study of the effects of fiscal and monetary policies on exchange rates and the current account and balance of payments. Includes exchange market efficiency, exchange rates and prices, LDC debt, and policy coordination.

ECON 519 ECONOMIC GROWTH AND DEVELOPMENT (3-6-5)

Analysis of theory and policy questions relating to the level and rate of economic development. Not offered every year.

ECON 521(S) PUBLIC FINANCE I (3-6-5)

Examination of the theory of public goods and externalities, political mechanisms and public choice, the theory of local public goods, cost-benefit analysis, and project evaluation issues of income redistribution. *Instructor: Mieszkowski*

ECON 522(F) PUBLIC FINANCE II (3-6-5)

Study of the effects of taxation on individual and firm behavior, general equilibrium tax incidence analysis, optimal taxation theory, optimal implementation of tax reform, analysis of comprehensive income, and consumption taxes. *Instructor: Mieszkowski*

ECON 523(S) OPTIMIZATION AND CAPITAL THEORY (3-6-5)

Study of dynamics, capital theory, and intertemporal optimization. Not offered every year.

ECON 530 COMPARATIVE ECONOMIC SYSTEMS (3-6-5)

Analysis of theoretical models of both market and centrally planned economies. Includes the national economic systems of the former Soviet Union, China, the former Yugoslavia, various Western European countries, and the U.S. Not offered every year.

ECON 536 GOVERNMENT REGULATION OF INDUSTRY (3-6-5)

Advanced analysis of the economics of antitrust and other forms of regulation. Not offered every year.

ECON 561 URBAN ECONOMICS (3-6-5)

Analysis of urban development and such urban problems as housing, land use, transportation, discrimination, and pollution.

ECON 565(F) HEALTH ECONOMICS (3-6-5)

Study of economic aspects of health. Includes production, cost, demand and supply factors, methods of payment, and effects of regulation. Offered every other year. *Instructors: Begley, Lairson, Swint*

ECON 573 NONLINEAR PROGRAMMING (3-0-5)

Instruction in the theory of, and computational methods for, nonlinear programming. Includes Kuhn-Tucker conditions, duality theory, and methods for constrained optimization of convex and nonconvex problems. Also offered as CAAM 573. Not offered every year.

ECON 577 TOPICS IN ECONOMIC THEORY I (3-0-5)

Discussion of selected topics in advanced mathematical economics. Not offered every year. *Instructor: Dudey*

ECON 578 TOPICS IN ECONOMIC THEORY II (3-0-3)

Discussion of selected topics in advanced mathematical economics. Not offered every year.

ECON 579(S) TOPICS IN ECONOMETRICS (3-0-5)

Discussion of selected topics in advanced econometrics. Prerequisite: ECON 511. Not offered every year. *Instructor: Chang*

ECON 591/592 TOPICS IN POLICY AND APPLIED ECONOMICS (3-6-5 each semester)

Discussion of selected topics in policy and applied economics. Not offered every year. *Instructor: Hartley*

ECON 593(F) WORKSHOP IN ECONOMICS I (3-0-3 each semester)**ECON 594(S)**

Seminars on advanced topics in macroeconomics, microeconomics, and econometrics, presented through guest lectures by leading researchers. Open to graduate students only. Includes preparation of a research paper over the course of the year and its presentation in the workshop.

Section 001 WORKSHOP IN MACROECONOMICS

Instructor: Bryant

Section 002 WORKSHOP IN MICROECONOMICS

Instructor: Chae

Section 003 WORKSHOP IN ECONOMETRICS

Instructor: Sickles

ECON 595(F) WORKSHOP IN ECONOMICS II (3-0-3 each semester)**ECON 596(S)**

Second-year continuation of ECON 593-594.

ECON 597(F) READINGS IN ADVANCED TOPICS (3-0-5 each semester)**ECON 598(S)****ECON 800 GRADUATE RESEARCH (hours variable)**

Instructor: Zodrow

Education (EDUC)

The School of Humanities

EDUC 311(F) HISTORICAL AND PHILOSOPHICAL FOUNDATIONS (3-0-3)

Analysis of historical and contemporary theories and practice in American education. Requires 15 hours of observation. Primarily geared toward beginning the process of teacher certification, but may be taken by students not in the teacher education program. Prerequisites: at least junior standing, permission of instructor, and, for those intending to complete Rice teacher preparatory program, filing of Teacher Certification Plan. *Instructor: Harcombe*

EDUC 312(S) PSYCHOLOGY OF HUMAN LEARNING (3-0-3)

Introduction to theoretical systems of human learning, with emphasis on the implications of children's development for secondary education. Includes introductory tests and measurements. Required for education majors. Open to students not in the teacher education program. Prerequisite: junior standing. *Instructor: Austin*

EDUC 367(S) COMPUTERS IN EDUCATION (3-0-3)

Exploration of how computers can enhance teaching at the secondary level. Open only to students in the teacher education program. Limited enrollment. Prerequisite: permission of instructor. *Instructor: Wells*

EDUC 370(F) SOCIOLOGY OF EDUCATION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Analyses of schools as social institutions that reflect, maintain, and perpetuate inequality in society. In a seminar format, contemporary sociological perspectives are brought to bear on the intended and unintended functions and purposes of schooling. Status attainment and social reproduction models provide frameworks for understanding the relation between social class origin, school achievement, and socioeconomic mobility. Limited enrollment. Also offered as SOCI 370. *Instructor: Valenzuela*

EDUC 409(F) FUNDAMENTALS OF SECONDARY EDUCATION (3-0-3)

Survey of the background, purposes, and organization of modern secondary schools and their students and their curricula. Includes the policy and administration of secondary schools, as well as introductory educational research. Required for students in the teacher education program. Open to students not in the teacher education program. Prerequisite: EDUC 311. *Instructor: McNeil*

EDUC 419(F) SUPERVISED TEACHING (3-0-3)

Field-based practicum for secondary teachers, with accompanying seminars. Prerequisites: EDUC 440 and permission of instructor. *Instructor: Heckelman*

The following seminars in teaching (EDUC 420-EDUC 426) provide the transition from the academic study of theories of teaching and learning and the analysis of the psychological, historical, and organizational context of teaching to the practice of teaching. Each of the seminars is designed to provide the preprofessional student with the theoretical and conceptual paradigms underlying the teaching and learning of particular subject fields. The courses include readings, classroom observations, the modeling of a wide range of pedagogical practices, and the preparation of curriculum materials and resource collections in preparation for teaching. Students will enroll in a seminar in teaching for each field in which the student seeks teacher certification. The appropriate seminar in teaching is the prerequisite for EDUC 440, student teaching in the Rice University Summer School for Middle and High School Students. EDUC 311 or 511 is a prerequisite for enrollment in the seminars in teaching, and permission of instructor is required.

EDUC 420(S) SEMINAR IN TEACHING ART (hours variable)

Study of methods for putting theory into practice in the classroom. Includes curriculum development for Summer School classes and learning about, reflecting on, and practicing skills of teaching applicable to the discipline. *Instructor: Heckelman*

EDUC 421(S) SEMINAR IN TEACHING ENGLISH (hours variable)

Study of methods for putting theory into practice in the classroom. Includes curriculum development for Summer School classes and learning about, reflecting on, and practicing skills of teaching applicable to the discipline. *Instructors: Heckelman, McNeil*

EDUC 422(S) SEMINAR IN TEACHING FOREIGN LANGUAGE
(hours variable)

Study of methods for putting theory into practice in the classroom. Includes curriculum development for Summer School classes and learning about, reflecting on, and practicing skills of teaching applicable to the discipline. *Instructors: Heckelman, McNeil*

EDUC 423(S) SEMINAR IN TEACHING MATHEMATICS (hours variable)

Study of methods for putting theory into practice in the classroom. Includes curriculum development for Summer School classes and learning about, reflecting on, and practicing skills of teaching applicable to the discipline. *Instructors: Austin, Heckelman, Papakonstantinou*

EDUC 424(S) SEMINAR IN TEACHING PHYSICAL EDUCATION
(hours variable)

Study of methods for putting theory into practice in the classroom. Includes curriculum development for Summer School classes and learning about, reflecting on, and practicing skills of teaching applicable to the discipline. *Instructor: Heckelman*

EDUC 425(S) SEMINAR IN TEACHING SCIENCE (hours variable)

Study of methods for putting theory into practice in the classroom. Includes curriculum development for Summer School classes and learning about, reflecting on, and practicing skills of teaching applicable to the discipline. *Instructors: Harcombe, Heckelman*

EDUC 426(S) SEMINAR IN TEACHING SOCIAL STUDIES (hours variable)

Study of methods for putting theory into practice in the classroom. Includes curriculum development for Summer School classes and learning about, reflecting on, and practicing skills of teaching applicable to the discipline. *Instructor: Heckelman*

EDUC 440 SUPERVISED TEACHING (3-0-3)

Student teaching in the Rice Summer School for Middle and High School Students under the supervision of assigned master teachers and education faculty. Prerequisites: EDUC 311 or 511, appropriate seminar(s) in teaching, and permission of instructor. May be repeated for credit. *Instructor: Heckelman*

EDUC 441(S) MINORITIES IN SCHOOL PROCESS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Seminar on minority academic underachievement viewed from various theoretical perspectives in the sociology of education. Includes contemporary issues pertaining to the undereducation of cultural and linguistic minorities, with emphasis on current empirical evidence. *Instructor: Valenzuela*

EDUC 489(S) ADOLESCENT LITERATURE (hours variable)

Exploration of the use of literature written for middle and high school students to engage and motivate reluctant readers.

EDUC 502(S) COLLOQUIUM ON EDUCATION (hours variable)

Seminar on current issues and research in education. Includes presentations by faculty, students, and guest speakers.

EDUC 509(F) FUNDAMENTALS OF SECONDARY EDUCATION (3-0-3)

M.A.T. equivalent of EDUC 409.

EDUC 511(F) HISTORICAL AND PHILOSOPHICAL FOUNDATIONS (3-0-3)

M.A.T. equivalent of EDUC 311.

EDUC 512(S) PSYCHOLOGY OF HUMAN LEARNING (3-0-3)

M.A.T. equivalent of EDUC 312.

EDUC 519(F) SUPERVISED TEACHING (3-0-3)

Field-based practicum for secondary teachers, with accompanying seminar. Prerequisites: EDUC 40 and permission of instructor. *Instructor: Heckelman*

EDUC 580 CONTEMPORARY TOPICS IN ELEMENTARY SCHOOL MATHEMATICS (4-0-4)

Mathematics topics related to elementary grades, including geometry, probability and statistics, patterns, relations, functions, and number theory. Hands-on experiences in innovative methods using manipulatives and technology, problem-solving techniques, and motivational strategies. Curriculum development. Offered in summers. Enrollment by permission of instructor. *Instructor: Papakonstantinou*

EDUC 585 CONTEMPORARY TOPICS IN MIDDLE SCHOOL MATHEMATICS (4-0-4)

Mathematics topics related to middle school mathematics, including geometry, probability and statistics, patterns, relations, functions, and number theory. A problem-solving approach to teaching mathematics with an emphasis on the use of manipulatives and technology. Curriculum development. Offered in summers. Enrollment by permission of instructor. *Instructor: Papakonstantinou*

EDUC 590 CONTEMPORARY TOPICS IN SENIOR HIGH SCHOOL MATHEMATICS (4-0-4)

Mathematics topics related to senior high school mathematics, including geometry, probability and statistics, functions, number theory, and sequences and series. A problem-solving approach to teaching mathematics with an emphasis on the use of technology. Curriculum development. Offered in summers. Enrollment by permission of instructor. *Instructor: Papakonstantinou*

EDUC 591 INDEPENDENT STUDY AND RESEARCH (hours variable)

Prerequisite: permission of instructor. *Instructors: Austin, Harcombe, McNeil, Sass*

EDUC 592(F) SEMINAR IN SCIENCE FOUNDATIONS (3-0-3)

Seminar conducted by faculty and community scientists in various fields (e.g., medicine, space, energy, and the environment) to increase an understanding of scientific principles both in local Houston applications and in secondary school science. Open to graduate and Class III students only. Prerequisites: EDUC 311 or 511 and permission of instructor. *Instructor: Harcombe*

EDUC 593(F) PRACTICUM IN TEACHING**EDUC 594(S) SCIENCE (2-0-2 each semester)**

Development and implementation of teaching strategies to engage students in the process of observation and discovery that is fundamental to the sciences. Open to graduate and Class III students only. *Instructor: Harcombe*

EDUC 595 TOPICS IN CONTEMPORARY ALGEBRA FOR IN-SERVICE TEACHERS (3-0-3)

Teaching beginning algebra with an emphasis on mathematical models and representations, variables and functions, and symbolic reasoning rather than symbolic manipulation. Foundation concepts for secondary mathematics, algebraic thinking and symbolic reasoning, function concepts, relationship between equations and functions, tools for algebraic thinking, relationship between algebra and geometry, and underlying mathematical processes. Use of manipulatives and technology. Curriculum development. Offered during the academic year and summers. Enrollment by permission of instructor. *Instructor: Papakonstantinou*

EDUC 596 STUDIES IN TEACHING AND LEARNING

(1 to 3 hours credit)

Study of field-based ethnographic research on teaching and learning. Includes seminar, independent research projects, ethnographic research methods, and directed case studies. Open to upperclassmen and graduate students, particularly those in education, sociology, anthropology, and psychology. Limited enrollment (15). Offered as needed. Prerequisite: permission of instructor. *Instructor: McNeil*

Electrical and Computer Engineering (ELEC)**The George R. Brown School of Engineering****ELEC 201(F) AN INTRODUCTION TO ENGINEERING DESIGN (3-3-4)**
DISTRIBUTION COURSE: GROUP III

"Hands-on" introduction to engineering design. Includes the design and construction of a functional robot by a team of students, using skills developed in the course, plus programming of the robot to perform simple tasks. Possibly limited enrollment. Open to both majors and nonmajors in engineering. *Instructors: Bennett, Young*

ELEC 241(F) ELECTRICAL CIRCUITS (3-3-4)

Basic circuit elements, mesh and node analysis, Thevenin and Norton equivalent circuit, controlled sources and op-amps, transient response analysis using differential equations, the use of phasors and impedance for sinusoidal AC analysis, and frequency response. Lab culminates in the design and testing of an AM radio. Required for electrical and computer engineering majors. Prerequisites: MATH 101 and 102 (or equivalent). *Instructor: Johnson*

ELEC 242(S) INTRODUCTION TO CIRCUITS AND ELECTRONICS (3-3-4)

Introduction to the basic concepts of electrical circuits (e.g., models of circuit elements, the formulation and solution of network equations, and time and frequency response), as well as basic electronic devices and circuits (e.g., diodes, switches, and op-amps). Lab culminates in the design and testing of an AM radio. Prerequisites: MATH 101 and 102 (or equivalent). *Instructor: Wits*

ELEC 301(F) INTRODUCTION TO SIGNALS (3-0-3)

Analysis of linear systems, using circuits as the primary example. Includes time and frequency domain analysis (e.g., solution of differential equations, convolution, and the Laplace transform) and Fourier analysis. Limited enrollment. Required for electrical and computer engineering majors. Prerequisite: ELEC 241. Corequisite: ELEC 303. *Instructor: Pearson*

ELEC 302(S) INTRODUCTION TO SYSTEMS (3-0-3)

Study of linear systems based on state-space representation. Includes the structural properties of systems (e.g., controllability, observability, and stabilizability) and relations between input-output and state-space descriptions, with applications to control problems. Prerequisite: ELEC 301. *Instructor: Antoulas*

ELEC 303(S) SYSTEMS LABORATORY (0-1-1)

Corequisite: ELEC 301. *Instructor: Antoulas*

ELEC 305(F) INTRODUCTION TO PHYSICAL ELECTRONICS (3-0-3)

Study of transmission lines and pulse propagation, basic semiconductor devices, waves and laser. *Instructor: Wilson*

ELEC 306(S) ELECTROMAGNETIC FIELDS AND DEVICES (3-0-3)

Analytical and numerical solutions of boundary value problems, waveguides and resonators, optical fibers, and includes survey of antennas and arrays. Prerequisite: ELEC 305. *Instructor: Tittel*

ELEC 320 INTRODUCTION TO COMPUTER ORGANIZATION (3-3-4)

Survey of basic computer architecture and assembly language programming. Includes systems software, loaders and assemblers, input-output devices, and interrupt programming. Required for electrical and computer engineering majors. Prerequisite: CAAM 210. *Instructors: Cox, Varman*

ELEC 322(S) APPLIED ALGORITHMS AND DATA STRUCTURE (3-3-4)

Design and analysis of computer algorithms and data structures useful for applied problems. Includes lab assignments using these techniques in conjunction with advanced programming methods. Required for computer science majors. Prerequisites: COMP 212 and 280. Also offered as COMP 314.

ELEC 326 DIGITAL LOGIC DESIGN (3-0-0)

Study of gates, flip-flops, combinational and sequential switching circuits, registers, and logical and arithmetic operations. Required for electrical and computer engineering majors. Prerequisite: COMP 210 or CAAM 210. *Instructors: Jump, Yarman*

ELEC 327(S) DIGITAL LOGIC DESIGN LABORATORY (0-2-2)

Design, construction, and testing of projects built from digital integrated circuits using techniques presented in ELEC 326. Prerequisites: ELEC 241 and 326. *Instructor: Jump*

ELEC 331 INTRODUCTION TO APPLIED PROBABILITY (3-0-3)

Survey of the concepts, interpretations, elementary techniques, and applications of modern probability theory. Prerequisite: MATH 102. Also offered as CAAM 381 and STAT 381. *Instructor: Pfeiffer*

ELEC 342 ELECTRONIC CIRCUITS (3-3-4)

Models of bipolar and field effect transistors. Biasing methods, two-port analysis, single-stage and multistage amplifiers, frequency domain characteristics, feedback, stability, and power amplifiers. Lab culminates in the design and testing of a hi-fi audio power amplifier. Required for electrical and computer engineering majors in B.S. program. Prerequisite: ELEC 241 or 242. *Instructors: Massey, Wise*

ELEC 359(S) QUANTUM MECHANICS (3-0-3)

Survey providing the background in quantum mechanics needed to understand solids and solid-state devices. Includes the Schrodinger equation, tunneling, harmonic oscillators, the hydrogen atom interaction of matter with radiation, and the band theory of solids. Prerequisites: MATH 212 and PHYS 201. *Instructor: Halas*

ELEC 421(S) OPERATING SYSTEMS AND CONCURRENT PROGRAMS (3-3-4)

Introduction to the design, construction, and analysis of concurrent programs, with emphasis on operating systems. Includes filing systems, schedulers, and memory allocators, with specific attention to process synchronization and communication within concurrent programs. Prerequisites: COMP 212 and ELEC 320. Also offered as COMP 421.

ELEC 422(F) VLSI DESIGN I (4-0-4)

Study of VLSI technology and design and MOS devices, characteristics, and fabrication. Includes logic design and implementation, VLSI design methodology, circuit simulation, and verification, as well as group design projects. Limited enrollment. Must take ELEC 423 the following semester. Prerequisite: ELEC 326. *Instructor: Cavallaro*

ELEC 423(S) VLSI DESIGN II (2-0-2)

Continuation of ELEC 422. Includes testing and evaluation of VLSI circuits designed in preceding course as well as study of efficient test methodologies and topics in computer-aided design. Prerequisite: ELEC 422. *Instructor: Cavallaro*

ELEC 424(S) COMPUTER SYSTEMS DESIGN (3-6-5)

Specification, design, and implementation of practical computer systems, taking into account cost constraints and available technology. Includes data path, control unit, and memory system design details, as well as a comparison of bus architectures and techniques for peripheral interfacing. Major design project required in lab. Prerequisites: ELEC 425 and 426. *Instructor: Bennett*

ELEC 425(F) COMPUTER SYSTEMS ARCHITECTURE (3-3-4)

Study of advanced uniprocessor system architecture and the basics of parallel architectures. Includes pipelining (e.g., dynamic scheduling and precise interrupt handling), techniques for exploiting instruction-level parallelism (e.g., superscalar and VLI architecture), case studies of recent high-performance microprocessors, vector processors, memory systems design (e.g., techniques to improve cache performance, virtual memory systems, and main memory enhancements), I/O systems such as disk arrays and graphical interfaces, and an overview of parallel computers. Prerequisites: ELEC 320/COMP 320 and ELEC 326. Also offered as COMP 425. *Instructor: Adve*

ELEC 426(F) DIGITAL SYSTEMS DESIGN (3-3-4)

Examination of the design elements of modern computer and microprocessor systems, with emphasis on state machine based design and microcontrollers. Includes use of VHDL, ABEL and graphical simulation software to model complex digital systems. Implementation of a system involving high-speed arithmetic techniques required in lab. Prerequisites: ELEC 320 and 326. *Instructor: Cyprus*

ELEC 427(S) PULSE AND DIGITAL CIRCUITS (3-3-4)

Study of discrete and integrated solid-state circuits. Includes monostable, bistable, and astable multivibrators, the interaction of linear components with diodes, bipolar transistors, and field effect transistors, applications of linear one and two degree-of-freedom circuits to digital hardware, the analysis of circuits and their interconnection to form digital systems, and the construction of digital projects using discrete and integrated circuits. Prerequisites: ELEC 327 and 342. *Instructor: Cyprus*

ELEC 428(S) COMPUTER SYSTEMS PERFORMANCE (3-3-4)

Examination of analytical models of computer systems. Includes queueing theory and Markov chains, simulation and analysis of simulation results, and operational analysis, as well as a project. Prerequisites: ELEC 331 and CAAM 381 or CAAM 382. *Instructor: Sinclair*

ELEC 430(S) COMMUNICATION THEORY AND SYSTEMS (3-0-3)

Review of applied probability theory and an introduction to stochastic processes. Includes complex-signal analysis, AM and FM, digital communication, PCM, signal transmission, optimum receiver theory, and information theory and coding. Prerequisites: ELEC 302 and 331 or CAAM 382. Corequisite: ELEC 433. *Instructor: Aazhang*

ELEC 431(F) DIGITAL SIGNAL PROCESSING (3-0-3)

Analysis of discrete time signals and systems. Includes filter design and implementation, an introduction to least squares and statistical signal processing, and applications in speech and image processing. Prerequisite: ELEC 301. *Instructor: Baraniuk*

ELEC 432(S) INTRODUCTION TO TIME SERIES ANALYSIS (3-0-3)

Introduction to time series modeling and forecasting. Prerequisite: STAT 310 or permission of instructor. Also offered as STAT 421. *Instructor: Cox*

ELEC 433(S) COMMUNICATIONS SYSTEMS LAB (0-2-2)

"Hands-on" experience in the simulation of communication systems. Includes Monte Carlo simulation of random signals (noise), block-oriented simulation of physical links, and a performance evaluation of the data network. Required for electrical and computer engineering majors in B.A. program. Corequisite: ELEC 430. *Instructor: Aazhang*

ELEC 435(F) ELECTROMECHANICAL DEVICES AND SYSTEMS (3-0-3)

Introduction to the physical and engineering aspects of electromechanical sensors and actuators. Includes underlying physical phenomena, practical devices, electrical and mechanical interfacing, and control of electromechanical systems. Prerequisite: ELEC 241 or 242. Also offered as MECH 335. *Instructor: Wise*

ELEC 436(S) CONTROL SYSTEMS I (3-0-3)

Representation, analysis, and design of simple control systems in the time and frequency domain. Prerequisite: ELEC 302.

ELEC 440(S) ARTIFICIAL INTELLIGENCE (3-3-4)

Study of methods for designing and analyzing intelligent agents (e.g., embedded control systems that achieve specific performance objectives within limited resources), using mathematical tools from computer science, logic, probability theory, and economics, as well as relevant literature in neurobiology and psychology. Includes construction of, and experimentation with, software simulations of complex discrete control systems. Optional module involves hardware implementation of an insect robot. Prerequisite: COMP 210. Also offered as COMP 440. *Instructor: Subramanian*

ELEC 442(F) ADVANCED ELECTRONIC CIRCUITS (3-3-4)

Electronic circuits used in communication and other systems, including feedforward, automatic gain control, active filtering, tuned amplification, oscillation, modulation, and detection, with emphasis on design and lab project. Prerequisite: ELEC 342. *Instructor: Massey*

ELEC 443(S) POWER ELECTRONIC CIRCUITS (3-3-4)

Minimization of power consumption in electronic circuits with the required system performance. Electronic circuits used in power systems, including the principles of phase-controlled rectification, high-frequency inversion, and DC-DC conversion, with emphasis on design and lab project. Prerequisite: ELEC 342. *Instructor: Massey*

ELEC 461(F) PROPERTIES OF ELECTRONIC MATERIALS (3-0-3)

Survey of the properties and parameters of dielectric, conducting, and semiconducting materials important to the understanding of device characteristics. Prerequisite: ELEC 359. *Instructor: Dalas*

ELEC 462(S) SEMICONDUCTOR DEVICES (3-4-4)

Survey of the physical principles and operational characteristics of semiconductor devices. Prerequisite: ELEC 461. *Instructor: Wilson*

ELEC 463(S) LASERS AND PHOTONICS (3-0-3)

Study of lasers, optoelectronics, integrated optics, nonlinear optics, holography, and optical processing. Prerequisite: ELEC 306. *Instructor: Rabson*

ELEC 464(F) INTEGRATED CIRCUIT ENGINEERING (3-0-3)

Exploration of semiconductor device physics, with emphasis on process-device interactions in the integrated circuit environment. Includes scaled device technologies, nonideal behavior of devices in a monolithic circuit, process engineering, and the impact of the statistics of device parameters on reliability and circuit design. Co-/Prerequisite: ELEC 462. *Instructors: Smayling, Wilson*

ELEC 465(F) PHYSICAL ELECTRONICS PRACTICUM (2-4-3)

A laboratory course, with lecture, to introduce students to a variety of experimental techniques, methods, and instruments of current interest. The content will generally correspond to the ideas and concepts introduced in the physical electronics courses, ELEC 305, 306, 461, and 463, including general optics; laser and fiber optics; spectroscopy, computer control of equipment, and data collection; acousto, electro, and nonlinear optics; vacuum systems, cryogenics, etc. Prerequisite: PHYS 201. *Instructor: Young*

ELEC 481(F) FUNDAMENTALS OF SYSTEMS PHYSIOLOGY AND BIOPHYSICS I (3-0-3)

Introduction to the nervous system and control of movement. Includes the electrophysiology of excitable cells, synaptic transmission and general sense receptors, the functional organization of the nervous system (e.g., reflex arc, spinal reflexes, and ascending [sensory] and descending [motor] neural pathways), and the electrophysiology and reflex neural organization of visual, auditory, and vestibular senses, as well as the genesis of the electroencephalogram (EEG). Prerequisite: permission of instructor. *Instructor: Clark, Jr.*

ELEC 482(S) FUNDAMENTALS OF PHYSIOLOGY AND BIOPHYSICS II (3-0-3)

Continuation of ELEC 481. Includes the electrophysiological and mechanical properties of the heart and vascular system (e.g., the control of heart rate, myocardial contractility, and vascular tone) by the autonomic nervous system [ANS], airway mechanics, gas transport in the lungs and peripheral tissues, and neural control of ventilation by the ANS, as well as the physiology of the kidney and its role in the acid-base balance of blood and water in the body. Prerequisite: permission of instructor. *Instructor: Clark, Jr.*

ELEC 483(S) INTRODUCTION OF BIOMEDICAL INSTRUMENTATION AND MEASUREMENT TECHNIQUES (3-0-3)

Review of basic sensors and measurement principles. Includes operational amplifier circuits (e.g., instrumentation and isolation amplifiers), micro- and macro-biopotential electrodes, cell cytometry and the measurement of blood pressure, blood flow, and heart sounds, as well as the measurement of temperature, principles of electrical safety (e.g., micro- and macro-shock hazards), and medical applications of ultrasound. Two lab exercises and a term project required. Prerequisite: permission of instructor. *Instructor: Clark, Jr.*

ELEC 484(F) FUNDAMENTALS OF BIOMEDICAL PHOTONICS (3-0-3)

Study of light propagation in biological tissues, photon interactions with molecules, cells and biological tissues, and photochemical, photothermal, and photomechanical mechanisms. Includes consequences of laser irradiation of biological systems, light dosimetry, theoretical description of techniques utilizing reflectance, fluorescence, Raman scattering, tissue temperature, and mechanical stress measurements, as well as laser diagnostics and therapy. *Instructor: Oraevsky*

ELEC 485(S) LASER BIOMEDICAL INSTRUMENTATION AND LASER INTERACTIONS (3-0-3)

Overview of the fundamentals of modern electro-optical, fiber-optical, spectroscopic, and optoacoustic sensing technologies. Includes medical lasers, optical diagnostics and imaging systems, optical microscopy, and the photochemical, photothermal, and photomechanical interactions of laser radiation with molecules, cells, and tissues, as well as therapeutic applications of lasers, computer modeling, and simulations of related processes. *Instructor: Oraevsky*

ELEC 490 ELECTRICAL ENGINEERING PROJECTS (hours variable)

Theoretical and experimental investigations under staff direction. May be repeated for credit. Required for electrical and computer engineering majors in B.A. program.

ELEC 491(F) SENIOR HONORS PROJECTS (2 hours credit)**ELEC 492(S) SENIOR HONORS PROJECTS (3 hours credit)**

Two-semester sequence for individual projects supervised by a faculty member. Includes group discussion of the professional aspects of engineering (e.g., technical writing, engineering ethics, research protocols, and patent considerations), a written proposal, various oral presentations throughout the year, and a final written report with an oral, conference-style presentation. Prerequisites: senior standing in department and permission of course coordinator. Must complete ELEC 492 to receive credit for ELEC 491. *Instructor: Johnson*

ELEC 496(F) ROBOTICS LABORATORY (0-3-1)

Lab for computer vision experiments, the programming of a mobile robot and industrial type PUMA robot, and operation of a Computer Numerical Control (CNC) mill and industrial-size CNC lathe, as well as projects. Corequisite: ELEC 498. Also offered as MECH 496. *Instructor: Ghorbel*

ELEC 498(F) INTRODUCTION TO ROBOTICS (3-0-3)

Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Also offered as MECH 498. *Instructor: Ghorbel*

ELEC 501(F) LINEAR SYSTEM THEORY (3-0-3)

In this course, dynamical systems described by sets of linear, differential, or difference equations will be considered. The goal is to approximate the behavior of such systems by that of simpler ones, the complexity being measured by the number of state variables needed to describe them. For such approximations to be useful, they need to preserve certain properties of the original system and lead to a quantification of the approximation error. Most existing methods fail to satisfy these requirements. The major difficulty is that the problem is nonconvex. We will present the theory of approximations in the so-called Hankel norm, which addresses both issues. Examples and case studies from electrical, mechanical, chemical, and civil engineering will be discussed, using algorithms available in Matlab. Prerequisite: ELEC 301 and 302, or equivalent. *Instructor: Antoulas*

ELEC 503(F) ROBOTICS II (3-0-3)

Advanced seminar in robotics. Content varies from year to year. Not offered 1997-98.

ELEC 504(S) CONTROL OF ROBOTICS (3-0-3)

Exploration of the modeling of robots, kinematics, and dynamics. Includes a review of basic control methods and approaches to robotic control (e.g., linearization, featuring "computed torque," variable structure, and adaptive control of manipulators). Prerequisite: ELEC 501 or permission of instructor. Not offered 1997-98.

ELEC 507(F) NONLINEAR DYNAMIC SYSTEMS ANALYSIS I (3-0-3)

Introduction to analytical methods describing functions (e.g., singular point and phase plane analysis) and to stability analysis via Lyapunov functions, digital computer simulation methods, parameter estimation, and sensitivity analysis. Includes an introduction to the chaotic behavior of nonlinear dynamic systems. Also offered as MECH 507. *Instructor: Clark, Jr.*

ELEC 508(S) NONLINEAR SYSTEMS ANALYSIS II (3-0-3)

Review of the fundamental properties of nonlinear systems. Includes nonlinear ordinary differential equations (e.g., the existence and uniqueness of solution), Lyapunov stability (e.g., stability definitions, Lyapunov's direct method, invariance theory, stability of linear systems, Lyapunov's linearization methods, and converse theorems), and input-output stability (e.g., the small gain theorem and passivity theorem), as well as case studies showing applications to nonlinear and adaptive control and robotics. Also offered as MECH 508. *Instructor: Ghorbel*

ELEC 519(S) PARALLEL ALGORITHMS AND ARCHITECTURE (3-0-3)

Study of parallel architectures (e.g., arrays, trees, hypercubes, and shared memory), the structure and relation between architectures, and parallel time, work, and efficiency. Includes the design and analysis of parallel algorithms, VLSI complexity, area-time tradeoffs, and area-efficient VLSI networks. Prerequisite: ELEC 322. Also offered as COMP 583. *Instructor: Varman*

ELEC 520(F) DISTRIBUTED SYSTEMS (3-3-4)

Study of distributed systems (e.g., workstations, local area networks, and server machines). Includes multiprocess structuring and interprocess communication, file access and memory management, user interfaces (e.g., window systems and command interpreters), and case studies of selected distributed systems, with emphasis on performance aspects of system software design. Prerequisites: ELEC 421 and 425. Also offered as COMP 520. *Instructor: Cox*

ELEC 521(F) ARTIFICIAL INTELLIGENCE (3-3-4)

Graduate version of ELEC 440. Prerequisites: ELEC 322 and 331 or CAAM 382.

ELEC 522(S) ADVANCED VLSI DESIGN (3-0-3)

Design and analysis of algorithm-specific VLSI processor architectures. Includes implementation of pipelined and systolic processor arrays, techniques for mapping numerical algorithms onto custom processor arrays, and a design project using high-level VLSI synthesis tools. Limited enrollment (15). Prerequisites: ELEC 422 and 423. *Instructor: Cavallaro*

ELEC 525(S) ADVANCED COMPUTER ARCHITECTURE (3-0-3)

Design of parallel architectures such as shared memory MIMD (multiple-instruction-multiple-data), message passing MIMD, and SIMD (single-instruction-multiple-data) architectures. Includes interconnection networks, techniques to reduce and tolerate communication latency (e.g., cache coherence protocols, memory consistency models, and multithreaded and data flow architectures), synchronization, and software involvement for improving performance, as well as case studies of parallel machines. Prerequisite: ELEC 425. Also offered as COMP 525. *Instructor: Adve*

ELEC 526(S) COMPUTER NETWORKS DESIGN/ANALYSIS (3-0-3)

Design and comparison of computer networks. Includes transmission media, data enclosing, error control, and techniques for performance analysis, as well as connectivity and reliability, capacity assignment, and network topologies, with emphasis on local area networks (e.g., rings, buses, and contention networks). Prerequisite: ELEC 428. Also offered as COMP 526. *Instructor: Sinclair*

ELEC 529(S) COMPUTER NETWORKS ARCHITECTURE AND PROTOCOL (3-3-4)

Introduction to computer networks and computer communication. Includes the design of protocols for error recovery, reliable delivery, routing, and congestion control, as well as store-and-forward networks, satellite networks, local area networks, and locally distributed systems, using case studies of networks, protocols, and protocol families, with emphasis on software design issues in computer communication. Prerequisites: STAT 310 and COMP 421. Also offered as COMP 529

ELEC 530(S) DETECTION THEORY (3-0-3)

Review of stochastic processes, Karhunen-Loeve expansion, the transmission and reception of digital signals over a variety of channels, intersymbol interference, and equalization. Includes additional topics in modern communication theory that vary from year to year. Prerequisite: ELEC 430. *Instructor: Johnson*

ELEC 531(F) DIGITAL SIGNAL PROCESSING (3-0-3)

Analysis of discrete time signals and systems. Includes the design and implementation of digital filters and efficient algorithms both for the discrete Fourier transform and for convolution. Prerequisite: CAAM 382 or a senior-level course in signals and linear systems. *Instructor: Burrus*

ELEC 532(S) SPECTRAL ANALYSIS (3-0-3)

Survey of classical and modern techniques for characterizing the frequency content of signals. Includes review of random processes and linear algebra, Fourier transform-based methods and the periodogram, parametric techniques such as autoregressive (AR) and autoregressive moving average (ARMA) modeling, nonparametric techniques (e.g., minimum variance and eigenspace methods), and time-varying spectral analysis. Prerequisites: ELEC 431 or 531 and 430 or 533. *Instructor: Baraniuk*

ELEC 533(F) INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS (3-0-3)

Review of basic probability and the formulation, analysis, representations, and applications of some standard random processes. Includes sequence of random variables, random vectors and estimation, basic concepts of random processes, random processes in linear systems, expansion of random processes, Wiener filtering, spectral representation of random processes, and white-noise integrals. Also offered as CAAM 583 and STAT 583. *Instructor: Aazhang*

ELEC 534(S) ESTIMATION THEORY (3-0-3)

Study of maximum likelihood and Bayesian vector parameter estimation, minimum mean square error estimation, and time series analysis. Includes algorithms based on state variable and ARMA models for signal estimation, model identification, and spectral estimation. Prerequisite: ELEC 430. Also offered as CAAM 584 and STAT 584. Not offered 1997-98.

ELEC 535(S) INFORMATION AND CODING THEORY (3-0-3)

Introduction to information theory concepts and basic theorems of channel coding and source coding with a fidelity criterion. Includes techniques of channel coding, parity check codes, an introduction to algebraic coding theory and convolutional codes, and variable-length source coding. Prerequisite: ELEC 331 or CAAM 381. Also offered as CAAM 585.

ELEC 536(S) CONTROL SYSTEMS II (3-0-3)

Study of feedback control design, with emphasis on the role of uncertainty. Includes the design of a feedback control system that meets performance specifications in the presence of uncertainties such as disturbances, measurement noise, and unmodeled plant dynamics. Prerequisite: ELEC 436 (or equivalent). *Instructor: Pearson*

ELEC 537(F) DESIGN AND CONTROL OF BROADBAND NETWORKS (3-0-3)

Graduate-level introduction to fundamental concepts for the design and control of broadband networks. Topics include resource reservation for multimedia traffic, routing, traffic modeling, congestion control, service disciplines, and multicasting. Concepts are applied to state-of-the-art systems and protocols such as integrated services networks, ATM, and future Internet protocols. *Instructor: Knightly*

ELEC 538(S) BROADBAND INTEGRATED SERVICE NETWORKS (3-0-3)

Design and analysis of broadband integrated networks that support multimedia applications via quality of service guarantees. Topics include end-to-end resource allocation for realtime multimedia applications, packet service disciplines, traffic modeling, and support for mobile and wireless hosts. Examples will be taken from the literature and from Internet and ATM protocols. *Instructor: Knightly*

ELEC 539(S) DIGITAL IMAGE PROCESSING (3-0-3)

Survey of modern techniques for image analysis, processing, and enhancement. Includes two-dimensional system and transform theory, sampling, linear and nonlinear filtering, feature extraction, compression and coding, and imaging systems. Prerequisite: ELEC 431 or 531. *Instructor: Baraniuk*

ELEC 551(F) INTRODUCTION TO BIOENGINEERING (1-0-1)

Seminar/tutorial introducing current research in bioengineering and biotechnology to acquaint students with the activities of various labs at Rice and the Texas Medical Center. Prerequisite: graduate standing or permission of instructor. Also offered as CENG 551. *Instructor: McIntire*

ELEC 561(F) TOPICS IN SEMICONDUCTOR MANUFACTURING (3-0-3)

Study of advanced methods for simulation and control of the fabrication of modern integrated circuits. Includes quality and reliability assurance. Prerequisite: ELEC 462. *Instructors: Smayling, Wilson*

ELEC 563(F) INTRODUCTION TO SOLID-STATE PHYSICS I (3-0-3)

Graduate version of PHYS 412. Includes an introduction to the fundamental concepts of crystalline solids (e.g., crystal structure, the band theory of electrons, and lattice vibration theory). Also offered as PHYS 563. *Instructor: Si*

ELEC 564 INTRODUCTION TO SOLID-STATE PHYSICS II (3-0-3)

Continuation of PHYS 563. Includes the scattering of waves by crystals, transport theory, and magnetic phenomena. Also offered as PHYS 564. *Instructor: Rimbey*

ELEC 566(S) PHYSICAL ELECTRONICS PROJECTS (hours variable)

Includes standard experiments, development of new experiments, and special projects undertaken in collaboration with a faculty member. *Instructor: Young*

ELEC 568(F) LASER SPECTROSCOPY (3-0-3)

Introduction to the theory and practice of laser spectroscopy as applied to atomic and molecular systems. *Instructor: Tittel*

ELEC 580(S) NEURONAL MODELING (3-0-3)

Introduction to mathematical techniques used in modeling neurons and neuronal systems, with guest lectures in selected application areas. Includes review of membrane ion channel kinetics, the mathematical characterization of parts of the neuron (e.g., soma, axon, and dendritic tree), vertebrate and invertebrate neuron models, and models of axonal and volume conduction in the medium surrounding the axon, with emphasis on neuron models exhibiting pacing and bursting activity. Prerequisites: ELEC 481 and 507 (or equivalent). *Instructor: Clark, Jr.*

ELEC 581(F) CARDIOVASCULAR DYNAMICS (3-4-4)

Analysis of properties and functions of the cardiovascular system. Includes detailed study of cardiac electrophysiology, ventricular mechanics, arterial hemodynamics, coronary and cerebral circulations, heart rate control, and imaging methods for determining ventricular volume and output flow, as well as therapeutic devices and computer-controlled drug delivery systems with their mathematical models. Internship project with engineer or life scientist working in the Texas Medical Center required. Prerequisites: ELEC 481, 482, and 507 (or equivalent). Not offered every year.

ELEC 584(F) FUNDAMENTALS OF BIOMEDICAL PHOTONICS (3-0-3)

Graduate version of ELEC 484. *Instructor: Oraevsky*

ELEC 585(S) LASER BIOMEDICAL INSTRUMENTATION (3-0-3)

Graduate version of ELEC 485. *Instructor: Oraevsky*

ELEC 587 ADVANCED STOCHASTIC PROCESSES (3-0-3)

Study of measure-theoretic probability, separability and measurability, analytic properties of sample functions, standard properties of second-order processes, and continuous-parameter Markov processes and martingales. Prerequisite: CAAM 581 or 583. Also offered as CAAM 587. Not offered 1997-98.

ELEC 590 SPECIAL PROJECTS (hours variable)

Theoretical and experimental investigations under staff direction.

ELEC 591(F) OPTICS (3-0-3)

Survey of important aspects of classical optical theory, wave properties of light, and the Fourier analysis approach to physical optics. Includes holography, integrated optics, and fiber optics. *Instructor: Rabson*

ELEC 592(F) NONLINEAR OPTICS (3-0-3)

Exploration of current and continuing topics of interest. May be repeated for credit.

ELEC 594(S) SEMINAR IN BIOMEDICAL ENGINEERING (3-0-3)

Seminar on biomedical research involving students and faculty from Houston area universities. Includes intense treatment of a specific biological system from several scientific and engineering viewpoints. Sponsored by the Houston Biomedical Engineering Society. Recommended for graduate students in chemical, electrical, and mechanical engineering.

ELEC 602(S) PHYSICS/ELECTRONIC MATERIALS (3-0-3)

Examination of the properties of natural and artificial electronic materials, with emphasis on electronic structure, transport, and optical properties. May include bulk properties, semiconductor heterostructure interfaces, superlattices, reduced dimensionality structures, ferroelectrics, nonequilibrium effects, and quantum transport.

ELEC 603(F) NANOPROBES (3-0-3)

Seminar on the principles, recent developments, and current applications of nanoprobe instruments and techniques. Includes atomic force, microscopes, and scanning tunneling microscopes.

Instructor: Halas

ELEC 620(F) COMPUTER ENGINEERING GRADUATE SEMINAR (1-0-1)

Seminar series required of all electrical and computer engineering graduate students. Includes research presentations of general interest by visitors, faculty, and senior graduate students. May be repeated for credit. *Instructors: Adve, Bennett*

ELEC 625(F) COMPUTER ARCHITECTURE SEMINAR (1-0-1)

Discussion of recent research papers in computer architecture and current research at Rice. *Instructors: Adve, Bennett*

ELEC 630(S) ADVANCED TOPICS IN TELECOMMUNICATIONS (3-0-3)

Lectures on telecommunications by Rice faculty, scientists from Bell Northern Research, and guest speakers. Includes radio and optical fiber data networks, spread spectrum signaling, error control coding, and time-division, frequency-division, and code-division multiple-access systems, as well as collision resolution algorithms, stability and throughput analysis, routing, flow control, switching, and buffering, with examples from operational telecommunication systems.

ELEC 632(S) SPEECH SIGNAL PROCESSING (3-0-3)

Study of acoustic models of speech production, the pitch and format structure of speech, the estimation of speech spectra (e.g., short-time Fourier analysis, filter banks, homomorphic signal processing, and autoregressive models), pitch detection, and vocoding algorithm (e.g., channel vocoders, homomorphic vocoders, and linear predictive vocoders). Prerequisite: ELEC 531.

ELEC 645(S) THIN FILMS (3-0-3)

Exploration of materials issues relevant to thin films. Includes techniques for vapor phase deposition of thin films (e.g., evaporation, sputtering, and chemical vapor deposition), epitaxy, generation of thin film defects, strain, growth anisotropy, and grain structure, as well as electrical, optical, and magnetic properties of thin film materials and structures. Also offered as MSCI 645. Not offered every year. *Instructor: Lairson*

ELEC 691(F) ADVANCED TOPICS IN SEMICONDUCTOR DEVICES (hours variable)

Seminar on advanced and developing semiconductor devices and systems. Includes advanced RAM design, EEPROMs, quantum wells and quantum dots, ferroelectric devices, micropower analog neural systems, and other devices. *Instructors: Smayling, Wilson*

ELEC 692(S) ADVANCED TOPICS IN LASER PHYSICS (hours variable)**ELEC 693(F) ADVANCED TOPICS IN COMPUTER****ELEC 694(S) SYSTEMS (3-0-3 each semester)**

May be repeated for credit. *Instructors: Cavallaro, Sinclair*

ELEC 695(F) ADVANCED TOPICS IN COMMUNICATIONS AND STATISTICAL SIGNAL PROCESSING (3-0-3)

Seminar on communications and statistical signal processing. Content varies from year to year. May be repeated for credit. Not offered every year.

ELEC 696(S) DIGITAL SIGNAL PROCESSING (3-0-3)

Seminar on advanced topics in digital signal processing. Includes time-varying systems, multidimensional signal processing, and other topics of current interest. Individual projects required. *Instructor: Burrus*

ELEC 698(S) ADVANCED TOPICS IN ROBOTICS (3-0-3)

Review of conventional robotics control, artificial neural networks for modeling, fuzzy logic control, neurofuzzy modeling and control, genetic algorithms, and genetic programming applications in robotics. Also offered as MECH 698. Not offered every year.

ELEC 699(S) OPTIMIZATION THEORY AND APPLICATION (3-0-3)

Seminar on linear vector spaces, normed linear spaces, Hilbert space, dual spaces, and Lagrange multiplier theory. Includes applications from control and system theory.

ELEC 760 BAYLOR-RICE M.D./PH.D. PROGRAM (hours variable)

Prerequisite: permission of department.

ELEC 800 RESEARCH AND THESIS (hours variable)

English (ENGL)

The School of Humanities

ENGL 101(F) FRESHMAN SEMINAR (3-0-3 each semester)**ENGL 102(S)**

DISTRIBUTION COURSE: GROUP I

Analysis and discussion of literary texts in poetry, drama, prose, and fiction. Includes frequent submission of essays.

ENGL 103(F) INTRODUCTION TO ARGUMENTATION AND**ENGL 104(S) ACADEMIC WRITING (3-0-3 each semester)**

Prepares students for writing in academic disciplines. Topics: identifying argument patterns, using on-line databases, practicing heuristic techniques, revising and editing papers with the conventions of formal written English, and using MLA and APA documentation systems. Prerequisite: permission of instructor. *Instructors: Driskill, Tobin*

ENGL 201 INTRODUCTION TO CREATIVE WRITING (3-0-3)

DISTRIBUTION COURSE: GROUP I

Limited enrollment. *Instructor: Recknagel*

ENGL 210(F) MAJOR BRITISH WRITERS, CHAUCER-1800 (3-0-3)

DISTRIBUTION COURSE: GROUP I

Readings in major British authors of the Middle Ages, the Renaissance, and the 18th century. Required for English majors. *Instructors: Doughtie, Logan, Piper*

ENGL 211 MAJOR BRITISH WRITERS, 1800-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP I

Readings in major British authors of the 19th and 20th centuries. Required for English major. *Instructor: Wallingford*

ENGL 215(F) WORDS IN ENGLISH: STRUCTURE, HISTORY, USE (3-0-3)
 DISTRIBUTION COURSE: GROUP I
 Introduction to the study of the internal structure of English words and the nature and history of the English vocabulary. Includes measures to enhance awareness of the rich lexical resources of the language and to facilitate acquisition of scientific, technical, and humanistic vocabulary. No previous linguistics background required. Also offered as LING 215. *Instructor: Kemmer*

ENGL 260 INTRODUCTION TO THE STUDY OF AMERICAN LITERATURE (3-0-3)
 DISTRIBUTION COURSE: GROUP I
 Introductory course in American literature. Required for English majors. *Instructors: Aranda, Derrick*

ENGL 270(S) ASPECTS OF MODERN LITERATURE (3-0-3)
 DISTRIBUTION COURSE: GROUP I
 Survey of modern and postmodern literature and thought. *Instructor: Morris*

ENGL 283(F) WOMEN WRITERS FROM 1400-1900 (3-0-3)
 DISTRIBUTION COURSE: GROUP I
 A survey of women writers from the Middle Ages and Renaissance through the 18th and 19th centuries, among them Amelia Lanier, Anne Finch, Aphra Behn, Mary Wollstonecraft, Jane Austen, and Mary Shelley. Also offered as WGST 249. *Instructor: Chance*

ENGL 301(F) FICTION WRITING (3-0-3 each semester)
ENGL 302(S)
 DISTRIBUTION COURSE: GROUP I
 Discussion and analysis of student fiction. May be repeated for credit. *Instructor: Apple*

ENGL 304 POETRY WRITING (3-0-3)
 DISTRIBUTION COURSE: GROUP I
 Extensive reading in modern poetry as well as regular practice in the writing of various forms will be required. May be repeated for credit. Limited enrollment. *Instructor: Wood*

ENGL 305(F) PERSONAL ESSAY (3-0-3)
 DISTRIBUTION COURSE: GROUP I
 Writing and reading personal essay and autobiography. Limited enrollment. *Instructor: Wood*

ENGL 306(S) EXPOSITORY WRITING (3-0-3)
 DISTRIBUTION COURSE: GROUP I
 A course in the composition of personal essays. Limited enrollment. *Instructor: Piper*

ENGL 308(S) ENGINEERING COMMUNICATION (hours variable)
 DISTRIBUTION COURSE: GROUP I
 Course consists of three parts, each 5 weeks: Part 1, principles of analyzing audiences, organizing information, and choosing communication strategies. Part 2, document design and editing. Part 3, oral presentations and graphics. Some assignments linked to topics from engineering courses. Must be concurrently enrolled in one or more engineering courses. Limited enrollment. *Instructor: Driskill*

ENGL 309(F) INTERACTIONS OF STYLE AND AUDIENCE (3-0-3)
 DISTRIBUTION COURSE: GROUP I
 Invites students to discuss and write critically about popular writing in the U.S. Includes ads, newspaper stories, feature articles, scripts, and best-selling fiction and nonfiction. How these construct the identities of large audiences and invite personal identification with certain themes and styles. Enrollment is limited to 16 because of number of computers available. *Instructor: Driskill*

ENGL 312(F) OLD ENGLISH (3-0-3)
 DISTRIBUTION COURSE: GROUP II
 Also offered as LING 312. *Instructor: Mitchell*

ENGL 315(F) INTRODUCTION TO MEDIEVAL CIVILIZATION: THE HIGH MIDDLE AGES, 1000-1492 (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Interdisciplinary introduction to the Middle Ages, which saw the spread of Christianity, Islam, and Rabbinic Judaism, the formation of modern European languages and political geography, and the beginnings of great artistic, philosophical, literary, and technological innovation. Includes the Crusades, economic growth and religious change, cathedral building, chivalry, the Black Death, and European expansion, using pictorial and architectural as well as literary and historical sources. Chronological continuation of HART 202 and HIST 202 (neither is a prerequisite). Also offered as HUMA 103. *Instructors: Henry, Neagley, Nirenberg*

ENGL 316(F) CHAUCER (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Selected early poems, the General Prologue, and *The Canterbury Tales*, including those of the Knight, Wife of Bath, Pardoner, Nun's Priest, and others. Requirements include a medieval feast and a dramatization of a Chaucerian tale. Also listed as WGST 305. *Instructor: Chance*

ENGL 318(S) TOLKIEN (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Survey of the writings of J.R.R. Tolkien, medieval scholar, fairy-tale teller, and epic writer, with emphasis on an analysis of the works within a literary, philosophical, and historical context. Includes medieval works that shaped Tolkien's vision (e.g., *Beowulf*, *Kalevala*, and *Sir Gawain and the Green Knight*). *Instructor: Chance*

ENGL 319(S) 16TH-CENTURY BRITISH LITERATURE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Works by More, Wyatt, Surrey, Sidney, Spenser, and Shakespeare's poems. *Instructor: Doughtie*

ENGL 321(F) SHAKESPEARE (3-0-3 each semester)**ENGL 322(S)****DISTRIBUTION COURSE: GROUP I**

Representative plays, including tragedies, comedies, histories, and romances. *Instructors: Doughtie, Grob*

ENGL 331(F) RESTORATION LITERATURE: DRAMA (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Instructor: Piper

ENGL 339(S) BRITISH ROMANTICS: POETRY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

The major writings of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats. *Instructor: Grob*

ENGL 342(S) VICTORIAN FICTION (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Instructor: Stern

ENGL 346(S) 20TH-CENTURY BRITISH FICTION (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Instructor: Lamos

ENGL 347(F) BRITISH POETRY, 1900-1950 (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Hopkins, Hardy, Yeats, Owen, Rosenberg, Eliot, Auden, and others. *Instructor: Wallingford*

ENGL 349(F) EUROPEAN FICTION, CERVANTES TO 1900 (3-0-3)**DISTRIBUTION COURSE: GROUP I**

From *Don Quixote* through *War and Peace*, a survey of novels from different European nations including *Eugene Onegin*, *The Betrothed*, *Elective Affinities*, and, perhaps, *The Manuscript Found in Saragasso*. *Instructor: Doody*

ENGL 350(S) EUROPEAN FICTION, 20TH CENTURY (3-0-3)

DISTRIBUTION COURSE: GROUP I

afka, Proust, Bely, and Hasek establish the basis of 20th-century European fiction and its many experiments. *Instructor: Doody*

ENGL 360(S) AMERICAN LITERATURE TO 1860 (3-0-3)

DISTRIBUTION COURSE: GROUP I

Instructor: Derrick

ENGL 362(F) AMERICAN FICTION, 1910-1940 (3-0-3)

DISTRIBUTION COURSE: GROUP I

Wharton, Hemingway, Fitzgerald, Faulkner, Hurston, Dos Passos, and their contemporaries.

Instructor: Morris

ENGL 363(S) AMERICAN FICTION, 1940-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP I

Experiments in narrative fiction by Reed, DeLillo, O'Brien, Mailer, Morrison, and others that prepare us to read *Gravity's Rainbow*. *Instructor: Doody*

ENGL 364(F) AMERICAN POETRY, 1900-1960 (3-0-3)

DISTRIBUTION COURSE: GROUP I

Instructor: Minter

ENGL 365(S) AMERICAN POETRY, 1960-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP I

Lowell, Bishop, Berryman, Plath, Rich, and others. *Instructor: Wallingford*

ENGL 370 SURVEY OF AFRICAN AMERICAN LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Instructor: Fultz

ENGL 372(F) SURVEY OF CONTEMPORARY CHICANO/A LITERATURE: FROM VILLARREAL'S *POCHO* (1959) TO CISNEROS'S *HOUSE ON MANGO STREET* (1988) (3-0-3)

DISTRIBUTION COURSE: GROUP I

This mixed-genre course will focus on the Chicano movement, the Chicano renaissance, and their alternative literary and mythic traditions. The readings and discussions will be framed by secondary materials that feature the following topics: cultural nationalism, bicultural identity, resistance theory, and Chicano feminism. Finally, attention will be given to the different colonial and regional histories that comprise Chicano/a literature, from the midwest to Texas, and from New Mexico to California. *Instructor: Aranda*

ENGL 373(F) SURVEY: CHICANO/A POETRY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Also offered as WGST 354. *Instructor: Aranda*

ENGL 376(F) LITERATURE AND MUSIC (3-0-3)

DISTRIBUTION COURSE: GROUP I

Interaction of literature and music in song, opera, and film; music as subject in drama and fiction. Technical knowledge of music useful but not required. *Instructor: Doughtie*

ENGL 377(F) LITERATURE AND ART (3-0-3)

DISTRIBUTION COURSE: GROUP I

Instructor: Snow

ENGL 378(F) LITERATURE AND THE ENVIRONMENT (3-0-3)

DISTRIBUTION COURSE: GROUP I

Instructor: Isle

ENGL 380(F) 20TH-CENTURY WOMEN WRITERS: SEX, GENDER, AND MODERNISM (3-0-3)

DISTRIBUTION COURSE: GROUP I

May be repeated for credit. Also offered as WGST 327. *Instructor: Lamos*

ENGL 394(S) STRUCTURE OF ENGLISH LANGUAGE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to modern English grammar, phonology, and semantics. Also offered as LING 39. *Instructor: Davis*

ENGL 395(S) HISTORY OF THE ENGLISH LANGUAGE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of 6,000 years of language history. Includes the phonological, morphological, syntactic and semantic history of the English language from its Indo-European origins, through the Anglo-Saxon and Middle English periods, and up to the present day. Also offered as LING 395. Not offered every year. *Instructor: Mitchell*

ENGL 401(F) ADVANCED CREATIVE WRITING:

ENGL 402(S) FICTION (3-0-3 each semester)

DISTRIBUTION COURSE: GROUP I

May be repeated for credit. Prerequisite: permission of instructor. *Instructor: Apple*

ENGL 404(S) ADVANCED CREATIVE WRITING: POETRY (3-0-3)

DISTRIBUTION COURSE: GROUP I

May be repeated for credit. Prerequisite: ENGL 304. Limited enrollment. *Instructor: Wood*

ENGL 412(S) MEDIEVAL STUDIES: EPIC AND ROMANCE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Instructor: Henry

ENGL 470 TOPICS IN AFRICAN AMERICAN LITERATURE: BLACK WOMEN WRITERS, 1850 TO PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP I

Topics vary from year to year. May be repeated for credit. Also offered as WGST 453. *Instructor: Fultz*

ENGL 476(S) FOLKSONG AND FOLKLORE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Oral verbal art in international folktales, British and American ballads, American folk lyrics, spirituals, work songs, blues, and urban legends. *Instructor: Doughtie*

ENGL 481(S) INTRODUCTION TO FEMINIST LITERARY THEORY AND CRITICISM (3-0-3)

DISTRIBUTION COURSE: GROUP I

This course begins with an overview of themes and practices in feminist literary theory and criticism from the 1970s to the present. Then we will turn our attention to recent work that engages the pressing concerns of feminist theory in the 1990s, work that investigates the shape of gendered subordination and strategies for feminist agency in the contexts both of cultural diversity and of particular women's negotiation of race, class, sexuality, and national identifications (among others). Also offered as WGST 407. *Instructor: Lurie*

ENGL 485(F) STUDIES IN MODERN LITERATURE: THE CITY IN LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

19th-century Paris and 20th-century New York in poems, novels, paintings, and photographs. *Instructor: Doody*

ENGL 487(F) AREA STUDIES: LITERATURE OF COLONIALISM (3-0-3)

DISTRIBUTION COURSE: GROUP I

*Instructor: Joseph***ENGL 491(F) STUDIES IN MAJOR BRITISH AUTHORS:
DICKENS (3-0-3)**

DISTRIBUTION COURSE: GROUP I

*Instructor: Patten***ENGL 493 DIRECTED READING (3-0-3)****ENGL 494 SENIOR SEMINAR (3-0-3)****ENGL 495 SENIOR THESIS (3-0-3)****ENGL 498(S) STUDIES IN LITERARY CRITICISM: QUEER THEORY
(3-0-3)**

DISTRIBUTION COURSE: GROUP I

Also offered as WGST 430. *Instructor: Lamos***ENGL 506(S) SEMINAR: CONTEMPORARY APPROACHES TO
COMPOSITION-INTRODUCTION TO COMPOSITION
STUDIES (3-0-3)**

An introductory survey of research on writing processes, theories of composition, and classroom approaches. Includes teaching composing in computer classrooms and traditional environments. Activities will include research projects with student writers, role-playing, on-line discussions, analysis of video transcripts of student writers working with tutors or writing consultants, textbook evaluation, and workshops. *Instructor: Driskill*

ENGL 508(S) SEMINAR: PROFESSIONAL WRITING (3-0-3)*Instructor: Michie***ENGL 509 MASTER'S THESIS (3-0-3)****ENGL 510(F) SEMINAR: PEDAGOGY (1-0-1)****ENGL 511(S) SEMINAR: PEDAGOGY (2-0-2)****ENGL 515(S) SEMINAR: CHRISTINE DE PIZAN IN 15TH-CENTURY
ENGLAND (3-0-3)**

The Franco-Italian woman poet Christine de Pizan was translated into English during the 15th century along with other poems dealing with the subject of female experience and the female hero, such as Jean d' Arras's "Melusene" and Boccaccio's "Concerning Famous Women." This seminar will examine these and other English poems about women as early as Chaucer's "Legend of Good Women" and as late as the "Assembly of Ladies," "Floure and the Leafe," "The Assembly of Gods," and Thomas Hoccleve's "Letter of Cupid." Also listed as WGST 406. *Instructor: Chance*

**ENGL 532(S) SEMINAR: 18TH-CENTURY BRITISH
LITERATURE (3-0-3)***Instructor: Piper***ENGL 539(F) SEMINAR: BRITISH ROMANTICS: WORDSWORTH
AND KEATS (3-0-3)***Instructor: Grob***ENGL 546(F) 20TH-CENTURY BRITISH FICTION: WOOLF AND
JOYCE (3-0-3)***Instructor: Lamos*

ENGL 561(S) SEMINAR: JAMES AND HIS CRITICS (3-0-3)*Instructor: Derrick***ENGL 562(F) SEMINAR: MODERN AMERICAN FICTION (3-0-3)***Instructor: Minter***ENGL 563(S) SEMINAR: CONTEMPORARY LITERATURE (3-0-3)***Instructor: Isle***ENGL 572(S) SEMINAR: CHICANO/A STUDIES (3-0-3)***Instructor: Aranda***ENGL 575(F) SEMINAR: FILM AND THEORY (3-0-3)***Instructor: Snow***ENGL 582(F) SEMINAR: FEMINIST LITERARY THEORY (3-0-3)***Instructor: Lurie***ENGL 598(F) SEMINAR: LITERARY CRITICISM-PROBLEMS IN LITERARY HISTORY (3-0-3)***Instructor: Joseph***ENGL 599(F) SEMINAR: LITERARY THEORY: POLITICS AND LITERARY THEORY (3-0-3)**An investigation of political and ethical concerns in literary interpretation. *Instructor: Morris***ENGL 601(F) TEACHING PRACTICUM (3-0-3 each semester)****ENGL 602(S)**

Open only to graduate students serving as teaching assistants for courses in English or the humanities.

ENGL 603(F) TEACHING OF LITERATURE AND**ENGL 604(S) COMPOSITION (3-0-3 each semester)**

Open only to graduate students teaching ENGL 101, 102, and 103.

ENGL 621(F) DIRECTED READING (3-0-3 each semester)**ENGL 622(S)****ENGL 701(F) BRITISH AND AMERICAN****ENGL 702(S) LITERATURE (3-0-3 each semester)****ENGL 703(F) RESEARCH LEADING TO CANDIDACY (hours variable)****ENGL 704(S)**

Research in British and American literary theory. Taken after completion of departmental course requirements for the master's or doctorate and before admission to candidacy.

ENGL 800 PH.D. RESEARCH AND THESIS (hours variable)

Taken after admission to candidacy.

Environmental Science and Engineering (ENVI)

The George R. Brown School of Engineering

ENVI 201(F) INTRODUCTION TO ENVIRONMENTAL SYSTEMS (3-3-4) **DISTRIBUTION COURSE: GROUP III**

Study of chemical, physical, and biological components of the environment as natural resources and the effects of pollution on their maintenance and utilization. Also offered as HEAL 201.

Instructor: Ward

ENVI 306(S) GLOBAL ENVIRONMENTAL LAW AND SUSTAINABLE DEVELOPMENT (3-0-3)

DISTRIBUTION COURSE: GROUP III

Examination of emerging trends toward sustainable development and global environmental protection. Includes international treaties on management of the oceans, global warming, ozone depletion, biodiversity, and development patterns, as well as the impact of trade treaties such as NAFTA and GATT. Limited enrollment. Offered every other year. *Instructor: Blackburn*

ENVI 401(F) INTRODUCTION TO ENVIRONMENTAL CHEMISTRY (3-3-4)

Study of the principles and the significance of measurements used to assess environmental quality. Includes hands-on measurements of both classical methods (e.g., titration and others) and modern instrumental methods of measuring pollutant concentrations. Prerequisites: CHEM 101 and 102.

Instructor: Tomson

ENVI 403(F) PRINCIPLES OF ENVIRONMENTAL ENGINEERING (3-0-3)

Survey of the fundamental principles of water treatment, wastewater treatment, air pollution control, and solid waste management. *Instructor: Hughes*

ENVI 404(F) INTRODUCTION TO GEOGRAPHICAL INFORMATION SYSTEMS (1-3-2)

Survey of the fundamental principles of Geographical Information Systems (GIS) and their applications in engineering, architecture, geology, biology, and environmental and social sciences. Includes hands-on instruction on two to three different GIS systems. *Instructor: Rifai*

ENVI 406(F) INTRODUCTION TO ENVIRONMENTAL LAW (3-0-3)

Legal techniques used by societies to plan and regulate the use of environmental resources. *Instructor: Blackburn*

ENVI 411(S) AIR POLLUTION AND SOLID WASTE MANAGEMENT (3-0-3)

ENVI 412(S) HYDROLOGY AND WATERSHED ANALYSIS (3-3-4)

Fundamentals of the hydrologic cycle, hydrograph techniques, flood routing, and open channel flow; hydrologic design; local watershed application and laboratory. Also offered as CIVI 464. *Instructor: Bedient*

ENVI 434(F) CHEMICAL TRANSPORT AND FATE IN THE ENVIRONMENT (3-0-3)

Study of the principles of mass balance, chemical partitioning, transport, and transformation in surface waters, ground waters, and the atmosphere. This course replaces undergraduate requirements for ENVI 534. *Instructor: Wiesner*

ENVI 443(F) ATMOSPHERIC SCIENCE (3-0-3)

This course emphasizes the science of the atmosphere. Subjects studied include radiation, climate dynamics; energy balance models; structure and stability; water, cloud, and precipitation physics; atmospheric dynamics; storms and special systems; and atmospheric electricity. Prerequisite: open to upper-level undergraduates and graduate students in science and engineering with permission of instructor. Also offered as SPAC 443. *Instructor: Few*

ENVI 490 SPECIAL STUDY AND RESEARCH (hours variable)

Open to environmental science and engineering majors with permission of department chair. Written thesis required.

ENVI 518(F) GROUNDWATER HYDROLOGY (3-0-3)

Study of groundwater hydrology, hydrogeology, well mechanics, and hydraulics. Includes contaminant transport in aquifer systems, numerical models, and groundwater remediation. *Instructor: Bedient*

ENVI 521(F) REMEDIATION TECHNOLOGIES (3-0-3)

Study of current remediation technologies for soil, water, and air. Covers SVE/sparging, surfactant/cosolvent and thermal technologies, reactive barriers, bioremediation, phytoremediation, soil washing, pump and treat, air emission controls. Includes selection criteria, costs, operating strategies, and troubleshooting. *Instructors: AATDF staff scientists and invited lecturers from industry.*

ENVI 525(S) ENVIRONMENTAL MICROBIOLOGY (3-0-3)

Exploration of environmental microbiology. Includes cell biology, microbial ecology, metabolic diversity, bioenergetics, microbial growth, and the degradation of environmental contaminants, with emphasis on the role of microorganisms in the environment and engineered systems for environmental applications. Offered in even years only. *Instructor: Hughes*

ENVI 530(S) PHYSICAL-CHEMICAL PROCESSES IN ENVIRONMENTAL ENGINEERING (3-0-3)

Introduction to colloid and surface chemistry, precipitation, mixing, particle aggregation, settling, packed bed filtration, adsorption, ion exchange, gas transfer, membrane processes, chemical oxidation, and disinfection operations used in environmental pollution control and potable water treatment. Prerequisites: ENVI 403 (or equivalent) and 534. *Instructor: Wiesner*

ENVI 534(F) TRANSPORT PHENOMENA AND ENVIRONMENTAL MODELING (3-0-3)

Study of the principles of fluid flow, mass transport, and transformation processes in natural and engineered systems. Includes applications in reactor engineering and in the chemical and biological reaction kinetics of environmental systems modeling for streams, lakes, estuaries, and the atmosphere. Prerequisites: ENVI 401, 434, or graduate standing. *Instructor: Wiesner*

ENVI 536(S) BIOLOGICAL PROCESSES (3-0-3)

Examination of the theory and application of biochemical processes in environmental engineering. Offered in odd years only.

ENVI 550(S) APPLIED WATER CHEMISTRY (3-0-3)

Exploration of the theoretical basis for considering the chemistry of natural and wastewater systems. Includes interfacial processes and parameter estimation methods in common use. *Instructor: Tomson*

ENVI 564 ATMOSPHERIC DYNAMICS (3-0-3)

Study of hydrodynamic equations of motion on a rotating planet solved for static, perturbed, and unstable flows in mesoscale and macroscale weather systems on earth and other planets. *Instructor: Few*

ENVI 590 M.E.E. AND M.E.S. SPECIAL STUDY AND RESEARCH (hours variable)

Independent investigation of a specific topic or problem in environmental engineering under the direction of a selected faculty member. Preparation of a formal report and the oral presentation of research results required.

ENVI 601(F) SEMINAR (3-0-3 each semester)

ENVI 602(S)

Continuing seminar on environmental research.

ENVI 630(F) CHARACTERIZATION, TRANSPORT, AND TREATMENT OF PARTICLES IN WATER (3-0-3)

Study of the theory and methods for characterizing aquasols, colloid chemistry, particle transport in porous media and simple flows, particle aggregation, aggregate and deposit morphology, and other special topics. Offered in odd years only. *Instructor: Wiesner*

ENVI 631(F) ENVIRONMENTAL SYSTEMS ANALYSIS (3-0-2)

Exploration of process interactions, optimal design, and focused treatment needs related to water supply, water and industrial waste treatment, water reuse, residuals management, and other special topics. Offered in even years only. *Instructor: Wiesner*

ENVI 634(S) ADVANCED TOPICS IN GROUNDWATER TRANSPORT (3-0-3)

Formal lectures and student projects in areas such as groundwater transport and modeling theory, water quality models, analytical and numerical techniques, and computer applications. *Instructor: Rifai*

ENVI 635(F) ADVANCED TOPICS IN WATER

ENVI 636(S) CHEMISTRY (hours variable)

Formal lecture and assigned reading in topics such as redox kinetics and thermodynamics, adsorption and desorption, and the associated mathematics. *Instructor: Tomson*

ENVI 640(F) ADVANCED TOPICS IN ENVIRONMENTAL

ENVI 641(S) BIOPROCESS ENGINEERING (hours variable)

Exploration of the biodegradation of xenobiotic compounds, methods of studying biotransformation processes, and the design of bioremediation systems. Prerequisite: ENVI 525 or 536. *Instructor: Hughes*

ENVI 651(F) M.S. RESEARCH AND THESIS (hours variable)

ENVI 652(S)

ENVI 800 PH.D. RESEARCH AND THESIS (hours variable)

French (FREN)

The School of Humanities

Note that the upper-level undergraduate courses are listed by section according to content.

FREN 101 ELEMENTARY FRENCH I (3-1-4)

DISTRIBUTION COURSE: GROUP I

Study of the French language, with equal emphasis on reading, writing, speaking, and understanding. Includes classroom activities supplemented by work in language lab. Must complete FREN 102 to receive distribution credit for FREN 101. *Instructor: Achard*

FREN 102 ELEMENTARY FRENCH II (3-1-4)

DISTRIBUTION COURSE: GROUP I

Continuation of FREN 101. Prerequisite: FREN 101 or placement exam.

FREN 201 INTERMEDIATE FRENCH I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Intense oral and written grammar review. Includes literary and cultural readings as basis for class discussions and compositions. Prerequisite: FREN 102 or placement exam. *Instructor: Achard*

FREN 202 INTERMEDIATE FRENCH II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of FREN 201. Prerequisite: FREN 201 or placement exam.

FREN 203 INTERMEDIATE CONVERSATION (3-0-3)

Not offered every year.

FREN 207 INTERMEDIATE CONVERSATION: DIJON(6-0-6)

Intensive grammar review, with emphasis on conversation and writing that draw on aspects of modern culture observed and experienced in the city of Dijon. Includes activities that encourage immersion into the life of Dijon. Conducted entirely in French. Offered only in Dijon summer program. Serves as prerequisite for 300-level courses (equivalent to FREN 201 and 202).

I. ADVANCED LANGUAGE

FREN 301 ADVANCED FRENCH GRAMMAR (3-0-3)

Intensive review of advanced French grammar and syntax, with emphasis on the idiomatic practice of modern French. Prerequisite: FREN 202 or placement exam. *Instructors: Alcover, Datta*

FREN 302(F) FRENCH PHONETICS (3-0-3)

Contrastive analysis of the French sound system. Includes key areas such as the diction and articulation of French speech, with emphasis on class work as well as lab practice. Prerequisite: FREN 202 or placement exam. *Instructor: Alcover*

FREN 303 ADVANCED CONVERSATION AND COMPOSITION (3-0-3)

DISTRIBUTION COURSE: GROUP I

Active practice in composition, oral analysis, and discussion based on readings in selected issues and problems of contemporary French society. Prerequisites: FREN 301 and 302 or placement exam. *Instructor: Datta*

FREN 305(S) FRENCH FOR THE PROFESSIONS (3-0-3)

Introduction to career and commercial French. Includes essential vocabulary and syntax specific to the language of French-speaking business. Prerequisite: FREN 301 or 304. *Instructor: Datta*

FREN 313(F) STRUCTURE OF FRENCH (3-0-3)

The primary objective of this course is to present contemporary French as a dynamic linguistic system shaped by historical, cognitive and sociological developments. The historical section presents the diachronic evolution of French as a crucial factor in the current use of the “standard” and regional dialects. The linguistic section analyses the language as a system of mental representation, and presents the tools necessary to describe that system. Linguistic forms are shown to be motivated by cognitive principles, which are identified and carefully examined. The last part of the course is devoted to the socio-economic conditions which preside over language use. Beyond the specific consideration of French, this course is concerned with the historical, psychological, and sociological dimensions that enter into the description of any language.

Instructor: Achard

FREN 401(S) TRANSLATION (3-0-3)

Exploration of the theory and practice of translation. Includes translation of modern texts from and into English. Prerequisites: FREN 301 or 304, and 311 or 312, and permission of instructor.

Instructors: Aresu, Wood

II. LITERATURE**FREN 311(F) INTRODUCTION TO FRENCH LITERATURE I (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Survey of the main currents in French literature from its beginning to the 18th century. Includes lectures and discussions in French. Prerequisite: FREN 202 or placement exam. *Instructor: Nelson*

FREN 312(S) INTRODUCTION TO FRENCH LITERATURE II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of the main currents in French literature from the 19th century to the present. Includes lectures and discussions in French. Prerequisite: FREN 202 or placement exam. *Instructors: Goux, Harter*

FREN 320 CLASSICS OF THE FRENCH NOVEL IN ENGLISH TRANSLATION (3-0-3)

Study of the evolution of the novel from the 17th century to the present as an introduction to the history of the genre, as well as explorations of personhood, gender ideology, sexuality, and modern capitalism. Includes Mme de Lafayette, Diderot, de Sade, Balzac, Flaubert, Proust, Sartre, Robbe-Grillet, and Duras. *Instructor: Wood*

FREN 410 THE LITERARY AND HISTORICAL IMAGE OF THE MEDIEVAL WOMAN (3-0-3)

Instructor: Nelson

FREN 414 LITERATURE AND CULTURE OF THE MIDDLE AGES: KING ARTHUR (3-0-3)

Examination of the origins of the legend of King Arthur and reasons for its popularity, particularly in literature of the French Middle Ages but also in other medieval literatures of Western Europe. Includes discussion of the legend's influence in diverse areas even in modern times. Prerequisites: FREN 301 or 304, and 311, or placement exam. *Instructor: Nelson*

FREN 415(S) COURTLY LOVE IN MEDIEVAL FRANCE (3-0-3)

Undergraduate version of FREN 515. Prerequisites: FREN 301 or 304, and 311. *Instructor: Nelson*

FREN 430 FRENCH CLASSICISM (3-0-3)

Undergraduate version of FREN 530. Prerequisites: FREN 301 or 304, 302, and 311. *Instructor: Alcover*

FREN 440(S) FRENCH ENLIGHTENMENT (3-0-3)

Study of literary, philosophical, and visual works that demonstrate how ideas of the Enlightenment and the rise of the bourgeoisie led to the French Revolution. Prerequisites: FREN 301 or 304, and 311. *Instructor: Alcover*

FREN 445 ENLIGHTENMENT AND COUNTER-ENLIGHTENMENT (3-0-3)

Undergraduate version of FREN 545. Prerequisites: FREN 301 or 304, and 311. *Instructor: Wood*

FREN 450 TOPICS IN 19TH-CENTURY LYRIC (3-0-3)

Study of the poetry and prose poetry of the 19th century, from the Romantic period to the symbolist era, through such writers as Desbordes-Valmore, Vigny, Hugo, Nerval, Baudelaire, Verlaine, Rimbaud, and Mallarmé. Prerequisites: FREN 301 or 304, and 311 or 312. *Instructor: Harter*

FREN 455(F) FROM NOSTALGIA TO HYSTERIA (3-0-3)

Study of brief fiction and the novel from Balzac to Rachilde, with an emphasis on close reading and an introduction to modern critical perspectives. Topic for Fall 1997: see FREN 555. Prerequisites: FREN 301 or 304, and 311 or 312. *Instructor: Harter*

FREN 460 WOMEN IN FRENCH LITERATURE (3-0-3)

Examination of ways that women have been represented in fiction—by themselves and by others—since the early modern period. Includes Mme de Lafayette, de Sade, Baudelaire, Villiers de l'Isle-Adam, de Beauvoir, Duras, and Wittig, with emphasis on the constitution of "the feminine" in literary texts as a cultural, historical, and social artifact. Prerequisites: FREN 301 or 304, and 311 or 312. Also offered as WGST 412. *Instructor: Harter*

FREN 462 THE LYRIC GENRE FROM BAUDELAIRE TO BONNEFOY (3-0-3)

Study of the major lyrical figures and poetic preoccupations of the 19th and 20th centuries, not limited to the hexagon. Prerequisites: FREN 301 or 304, and 312. *Instructor: Aresu*

FREN 465 SURREALIST NARRATIVES (3-0-3)

Survey of sociohistorical reasons for the emergence of the avant-garde. Includes Breton's *Nadja*, Aragon's *Le paysan de Paris*, Artaud's *Heliogabale*, Michaux's *Un barbare en Asie*, Bataille's *Le bleu du ciel* and *Histoire de l'oeil*, and Gracq's *Au chateau d'Argol*. Prerequisites: FREN 301 or 304, and 312. *Instructor: Wood*

FREN 466(F) THE NARRATIVE AND THE OTHER ARTS (3-0-3)

Undergraduate version of Fren 566. Taught occasionally in English. Prerequisites: Fren 301 or 304, and 312, or placement exam. *Instructor: Aresu*

FREN 472 PROUST (3-0-3)

Undergraduate version of FREN 572. Prerequisites: FREN 301 or 304, and 312. *Instructor: Wood*

FREN 475 FLAUBERT AND SARTRE: "L'IDIOT DE LA FAMILLE" (3-0-3)

Undergraduate version of FREN 575. Prerequisites: FREN 301 or 304, and 312. *Instructor: Wood*

III. CULTURE, HISTORY, AND CIVILIZATION**FREN 306 ASPECTS OF MODERN FRENCH CULTURE: DIJON (3-0-3)**

Conversation and composition using current newspapers, magazines, and events in the city of Dijon. Includes study of the food and wine of the region as part of the culture. See also FREN 406. Offered only in Dijon summer program.

**FREN 309 STUDY OF THE MASTERPIECES OF BURGUNDIAN
ART AND ARCHITECTURE: DIJON (3-0-3)**

Survey of the art and architecture of Burgundy within the context of the history of the region. Includes on-site visits to museums and buildings of interest in the city of Dijon and its surrounding area. See also FREN 409. Offered only in Dijon summer program.

FREN 321(F) PARIS (3-0-3)

Overview of the history of Paris both as a city and a capital and as a cultural, intellectual, and economic center. Includes texts, slides, music, and films. Prerequisite: FREN 301 or 304. *Instructor: Alcover*

FREN 351 THE PROVINCES OF FRANCE (3-0-3)

At the time of the Revolution in 1789, France was divided into 32 administrative units called provinces, which largely correspond to the 22 regions of modern times. An amazing diversity in the history, languages, economic bases, traditions, and cultures can be found in the original provinces. This course will explore the development of the provinces from earliest times in order to arrive at a better understanding of France as it exists today. *Instructor: Nelson*

FREN 360(S) SOCIETY AND THE SEXES IN MODERN FRANCE (3-0-3)

Examination of gender roles, gender ideology, and sexual practices in the construction of French society and culture from the Enlightenment to World War II. Includes sexual politics and emergent “public sphere” in the 18th century, masculine and feminine images of the state during the French Revolution, feminist discourses and politics in 1789, 1848, and during the campaign for women’s suffrage, and family structures, patriarchy, and notions of property. Taught in English. Some readings may be in French. Also offered as HIST 360 and WGST 311. *Instructor: Sherman*

**FREN 369 FRENCH CULTURE AND SOCIETY IN THE ANCIEN
REGIME (3-0-3)**

Topics include the emergence of absolutism, bourgeois and popular culture, the family, and the state. *Instructor: Sherman*

FREN 371(F) OLD REGIME AND REVOLUTIONARY FRANCE (3-0-3)

Study of transformations in French society, culture, and politics before, during, and after the French Revolution. Taught in English. Required for French studies majors; may substitute FREN 372. Also offered as HIST 371. *Instructor: Sherman*

FREN 372 THE MAKING OF MODERN FRANCE, 1815-1995 (3-0-3)

Study of the emergence of modern France. Includes the impacts of war, industrialization, imperialism, and cultural mastery. Taught in English. Also offered as HIST 372. *Instructor: Sherman*

FREN 387(S) IMAGES OF CONTEMPORARY FRANCE (3-0-3)

The course will deal with the sociopolitical and intellectual history of post-war France. Based upon texts by Wylie, Edmiston, and Duménil, it will also examine various analyses of French culture by Valéry, E. Faure, R. Aron, Furet, Barthes, Baudrillard, Lipovetsky, and Lyotard. The course will cover such topics as the advent of the Fifth Republic, decolonization, May '68 and political dissent, modernization and the postmodern condition, and France and the construction of Europe. *Instructor: Goux*

FREN 403 SPECIAL TOPICS IN FRENCH STUDIES (3-0-3)

**FREN 406 ASPECTS OF MODERN FRENCH CULTURE: DIJON
(3-0-3)**

Enriched version of FREN 306. Offered only in Dijon summer program.

FREN 407 FRENCH FILM I (3-0-3)

Undergraduate version of FREN 507. Prerequisites: FREN 302, and 301 or 304. *Instructor: Alcover*

FREN 408 FRENCH FILM II (3-0-3)

Undergraduate version of FREN 508. Prerequisites: FREN 302, and 301 or 304. *Instructor: Alcover*

FREN 409 STUDY OF THE MASTERPIECES OF BURGUNDIAN ART AND ARCHITECTURE: DIJON (3-0-3)

Enriched version of FREN 309. Offered only in Dijon summer program.

FREN 452 ART, POLITICS, AND SOCIETY IN 19TH-CENTURY FRANCE (3-0-3)

Seminar on realism, impressionism, and "official" institutional culture. Taught in English. Also offered as HIST 452. *Instructor: Sherman*

FREN 453(F) HISTORY AS TEXT IN MODERN FRANCE (3-0-3)

Undergraduate version of FREN 553. Also offered as HIST 453. *Instructor: Sherman*

FREN 463 FROM MODERNITY TO POSTMODERNITY AND THE THIRD TECHNOLOGICAL REVOLUTION (3-0-3)

Undergraduate version of FREN 563. Prerequisites: Fren 301 or 304, and 311 or 312. *Instructor: Wood*

FREN 464 LITERATURE AND PSYCHOANALYSIS (3-0-3)

Undergraduate version of FREN 564. Prerequisites: FREN 301 or 304, and 312. *Instructor: Harter*

FREN 467(F) THE POSTMODERN BREAK IN FRENCH PHILOSOPHY (3-0-3)

Undergraduate version of FREN 567. Prerequisites: FREN 301 or 304, and 312, or placement exam. *Instructor: Goux*

FREN 468 FRENCH PHILOSOPHY (3-0-3)

Instructor: Goux

FREN 471 SOCIETY, CULTURE, AND THE BODY IN MODERN FRANCE (3-0-3)

Undergraduate version of FREN 571. Taught in English. Also offered as HIST 471. *Instructors: Harter, Sherman*

FREN 473 "LA REVOLUTION TRANQUILLE": SEMINAR ON THE HISTORY AND CULTURE OF MODERN QUEBEC (3-0-3)

Undergraduate version of FREN 573. Prerequisites: FREN 301 or 304, and 312 or 372. *Instructor: Aresu*

FREN 474 COLONIAL AND POSTCOLONIAL TEXTS (3-0-3)

Undergraduate version of FREN 574. Prerequisites: FREN 301 or 304, and 312 or 372. *Instructor: Aresu*

FREN 476 TRADITION, IDENTITY, AND HISTORICAL WRITING (3-0-3)

Exploration of the intersection of cultural tradition, collective identity, and historical writing in the modern West. Includes the uses made of the classical past in movements from Renaissance humanism to contemporary Afrocentricism, the development of nationalist traditions, and the creation of European identities through juxtapositions with other cultures. Limited enrollment. Also offered as HIST 476. *Instructors: Quillen, Sherman*

**FREN 477 THE MEANING OF THE SACRED IN FRENCH
THOUGHT, FROM SURREALISM TO THE
PRESENT (3-0-3)**

Undergraduate version of FREN 577. Prerequisites: FREN 301 or 304, and 311 or 312. *Instructor: Wood*

**FREN 478 CONTEMPORARY FRENCH THOUGHT: TOWARD A
SYMBOLIC ECONOMY (3-0-3)**

Undergraduate version of FREN 578. Prerequisites: FREN 301 or 304, and 312. *Instructor: Goux*

FREN 479 MARX, BATAILLE, BAUDRILLARD (3-0-3)

Undergraduate version of FREN 579. *Instructor: Wood*

**FREN 482 WESTERN TRADITIONS/POSTCOLONIAL
CHALLENGES (3-0-3)**

Undergraduate version of FREN 582. Prerequisites: FREN 301 or 304, and 312 or 372. *Instructor: Aresu*

**FREN 483 SOCIOPOLITICAL INTERPRETATION OF
LITERATURE (3-0-3)**

Undergraduate version of FREN 583. *Instructor: Goux*

**FREN 484(S) AESTHETIC THEORIES OF MODERNISM AND
POSTMODERNISM (3-0-3)**

Analysis of the crisis of "representation" and "subjectivity," using French theories of aesthetic modernism and postmodernism, with emphasis on arguments of the avant-garde (e.g., cubism, abstraction, surrealism, existentialism, structuralism, and "Tel Quel") and parallelism between literature, painting, and theater (and occasionally cinema and architecture). Includes Delaunay, Valéry, Breton, Artaud, Sartre, Barthes, Sollers, and Lyotard. *Instructor: Goux*

FREN 485 NOVEL FROM BELLE EPOQUE TO 1950 (3-0-3)

Survey of the evolution of the novel and the vicissitudes of the modern subject and identity. Includes Proust, Gide, Malraux, Drieu la Rochelle, de Beauvoir, Sartre, Genet, Camus, and Sarraute. Prerequisites: FREN 301 or 304, and 312. *Instructor: Wood*

FREN 489 FEMININE AND MASCULINE IDENTITY (3-0-3)

Examination through philosophy, anthropology, and psychoanalysis of the issue of gender in French theory. Includes Breton, Levi-Strauss, de Beauvoir, Lacan, Bachelard, Derrida, Irigaray, and Badinter, among others. *Instructor: Goux*

FREN 490 FRENCH UTOPIANISTS (3-0-3)

Study of the most important utopianists (e.g., Cyrano de Bergerac, Fénelon, Fontenelle, Restif de la Bretonne, Mercier, Morelly, Fourier, Cabet, and others). Includes sociological as well as psychoanalytical and philosophical interpretations of utopian discourse (e.g., Marx, Barthes, Ricoeur, and others). Prerequisites: FREN 301 or 304, and 312. *Instructor: Goux*

V. Graduate

FREN 500 THESIS RESEARCH (M.A.) (0-0-3)

FREN 503 SPECIAL TOPICS IN FRENCH STUDIES (3-0-3)

FREN 504 BEGINNINGS OF THE LANGUAGE AND LITERATURE OF FRANCE (3-0-3)

Study of the external history of the French language through examination of hagiographic literature and the *chanson de geste* in their cultural and artistic contexts. Includes a bibliographic component to acquaint students with library tools available for research, with emphasis on medieval resources but not excluding those for later periods. Provides reading knowledge of Old French. *Instructor: Nelson*

FREN 507 FRENCH FILM (3-0-3)

Introduction to film analysis and the field of cinematographic illusion through French cinema. *Instructor: Alcover*

FREN 508 FRENCH FILM II (3-0-3)

Special topics in French film. *Instructor: Alcover*

FREN 510 THE LITERARY AND HISTORICAL IMAGE OF THE MEDIEVAL WOMAN (3-0-3)

Comparison and contrast of the presentation of the medieval woman in literature with extant evidence of historical women from contemporary documents and records. *Instructor: Nelson*

FREN 515(S) COURTLY LOVE IN MEDIEVAL FRANCE (3-0-3)

Examination of social, religious, philosophical, and historical aspects of the 12th century that combined to produce a new concept of love expressed first in Occitan lyric poetry and later in the poetry, *lais*, and romances of northern France. Includes lyric poetry of both *langue d'oc* and *langue d'oïl*, the *lais* of Marie de France, and *Le Chevalier à la charette* by Chrétien de Troyes. *Instructor: Nelson*

FREN 530 FRENCH CLASSICISM (3-0-3)

Study of the formation and culmination of absolutism and classicism in the literary and visual arts. *Instructor: Alcover*

FREN 535 SEMINAR: 17TH- AND 18TH-CENTURY COMEDY (3-0-3)

Study of French comedy as a genre. Includes Corneille, Cyrano, Moliere, Regnard, Marivaux, and Beaumarchais, as well as critical works by d'Aubignac, Boileau, Diderot, Mauron, and Genette. *Instructor: Alcover*

FREN 540(S) THE AGE OF ENLIGHTENMENT (3-0-3)

Study of the Enlightenment and the bourgeoisie. Includes works of major writers and painters of the age examined in their social context and in light of contemporary critical theory. *Instructor: Alcover*

FREN 545 ENLIGHTENMENT AND COUNTER-ENLIGHTENMENT (3-0-3)

Survey of classic texts of the 18th century (e.g., Kant, Condorcet, and d'Holbach) and the anti-Enlightenment tradition (e.g., de Sade, the Romantic reaction, de Maistre, and Nietzsche). Includes a continuation of the debate in French and European thought (e.g., Sartre, Marxism, poststructuralism vs. Habermas, Adorno, '80s neoliberalism, and the return of the sacred in recent French thought). Taught alternately in French and English. *Instructor: Wood*

FREN 553(F) HISTORY AS TEXT IN MODERN FRANCE (3-0-3)

Examination of major 19th- and 20th-century historical texts both as narratives about the French past and as discourses embodying particular attitudes toward contemporary society and politics. Includes the emergence of a "scientific" history of the Revolution (e.g., Michelet, Tocqueville, and Taine) and its relation to the historical novel, the Annales school and the question of French identity (e.g., Bloch and Braudel), and the politics of theory in recent French history (e.g., Foucault and Chartier). Taught in English. Readings in French or English. Also offered as HIST 553. *Instructor: Sherman*

FREN 555(F) STUDIES IN 19TH-CENTURY FICTION (3-0-3)

Exploration of topics in 19th-century fiction and narrative poetics. Topic for Fall 1997: "From Nostalgia to Hysteria: Balzac, Stendhal, Flaubert, Maupassant." A study of 19th-century fiction through its discourses of displacement — its depictions of nostalgia and of homelessness in the first half of the century and of the crowd, the flâneur, and hysteria in the second. Reading closely both primary and theoretical texts, we will focus on French narrative, but we will also consider texts by Baudelaire, Poe, and Gilman, as well as the paintings of Géricault. *Instructor: Harter*

FREN 561 DEVELOPMENTS IN FRENCH FEMINIST THEORY (3-0-3)

Study of recent French feminist theory, with emphasis on mapping out this critical perspective in both its ideological and its interpretive implications. *Instructors: Alcover, Harter, Wood*

FREN 562 THE LYRIC GENRE FROM BAUDELAIRE TO BONNEFOY (3-0-3)

Study of the situation of the writing subject and strategies of representation in the modern lyric using Bonnefoy's "La présence et l'image" as a point of departure. Includes Baudelaire, Rimbaud, Lautréamont, Breton, Perse, Ponge, and Bonnefoy. *Instructor: Aresu*

FREN 563 FROM MODERNITY TO POSTMODERNITY AND THE THIRD TECHNOLOGICAL REVOLUTION (3-0-3)

Study of literary and philosophical postmodernity and feminism as both bearers and problematisers of the postindustrial revolution. Includes the services/information economy, dissolution of the nuclear family, the end of Oedipus, and the functionally adaptive feminization (or androgynization) of the work force. Taught alternately in French and English. *Instructor: Wood*

FREN 564 LITERATURE AND PSYCHOANALYSIS (3-0-3)

Exploration of the ways in which literature and psychoanalysis have seemed most fruitfully to inform each other. Includes readings in primary literature as well as in Freud, Lacan, Cixous, Lacoue-Labarthe, Silverman, Jameson, Felman, and Bersani. *Instructor: Harter*

FREN 566(F) THE NARRATIVE AND THE OTHER ARTS (3-0-3)

Seminar on the production of *imaginaires* and the relationship between scriptural and pictorial languages in modern culture. Includes theoretical texts by Bachelard, Durand, Burgos, Robbe-Grillet, and Sarraute and narratives (fictional, poetic, and cinematic) by Cocteau, Breton, and Duras. *Instructor: Aresu*

FREN 567(F) THE POSTMODERN BREAK IN FRENCH PHILOSOPHY (3-0-3)

Study of the questioning of philosophical modernity (starting with Descartes and the Enlightenment philosophers) by structuralist and poststructuralist thinkers and theorists of the postmodern condition. Includes Lacan, Derrida, Foucault, Lyotard, and others. *Instructor: Goux*

FREN 568 FRENCH PHILOSOPHY (3-0-3)

Survey of moral philosophy from Descartes to today, exploring the relationship between the individual and society, the problem of freedom and values, questions of universality, humanism, and important moments of the constitution and deconstitution of the subject. Includes philosophy of Descartes, Rousseau, Condorcet, Comte, Guyau, Durkheim, Fouillée, Bergson, Alain, Camus, Sartre, de Beauvoir, Lacan, Irigaray, Foucault, and Ricoeur. *Instructor: Goux*

FREN 570 TOPICS IN FRENCH CULTURAL HISTORY (3-0-3)

A theoretical and methodological exploration of various approaches to, and issues in, the study of French and European cultures since the 18th century. Topics vary from year to year. Taught in English. *Instructor: Sherman*

FREN 571 SOCIETY, CULTURE, AND THE BODY IN MODERN FRANCE (3-0-3)

Seminar on the body as a central text, metaphor, and contested site in French culture and society since the 18th century. Includes readings from literary genres as well as from history, art history, and theory on sexuality and sexual difference, science, discipline and regulation, domination and submission, and the construction of the body in pornography, lyric poetry, political imagery, and painting. Taught in English. Also offered as HIST 571. *Instructors: Harter, Sherman*

FREN 572 PROUST (3-0-3)

Extensive close textual readings and broad-ranging meditations on the meaning of *A la recherche du temps perdu* in terms of the history of artistic modernism and social modernity. Taught alternately in French and English. *Instructor: Wood*

FREN 573 "LA REVOLUTION TRANQUILLE": SEMINAR ON THE HISTORY AND CULTURE OF MODERN QUEBEC (3-0-3)

Literary texts by Carrier, Godbout, Maillet, and Hébert. The plastic arts: Pellán, Riopelle, and Borduas. "Le Cinema direct" and the cinematography of Perrault, Jutra, and Arcand. Emphasis varies from year to year. *Instructor: Aresu*

FREN 574 COLONIAL AND POSTCOLONIAL TEXTS (3-0-3)

Study of various modes of negotiation and construction of identity (transnational and transcultural) through selected artistic, historical, literary, and theoretical "texts," as well as current debates on ethnicity and crossculturalism. Emphasis varies from semester to semester (Mediterranean Africa, Sub-Saharan, Caribbean). Includes Fanon, Soyinka, Mudimbe, Kourouma, Labou Tansi, Djébar, Mimouni, Glissant, Condé, and Warner-Vieyra, as well as selections contributed by students. Open to non-French studies majors. *Instructor: Aresu*

FREN 575 FLAUBERT AND SARTRE: "L'IDIOT DE LA FAMILLE" (3-0-3)

Exploration, through close readings of Flaubert (the major novels and juvenilia) and Sartre's biography of Flaubert, of the theoretical problems entailed in simultaneously mobilizing Marxism, sociology, psychoanalysis, literary history, and literary critical analysis. Includes comparison of late Sartre with poststructuralist accounts of the construction of the subject. Taught alternately in French and English. *Instructor: Wood*

FREN 577 THE MEANING OF THE SACRED IN FRENCH THOUGHT, FROM SURREALISM TO THE PRESENT (3-0-3)

Examination of the reasons for, and significance of, the rise of a post-theological notion of the sacred in modernity. Includes surrealism, *Collège de sociologie*, Sartre, Levinas, Girard, Tournier, Derrida, and others, as well as postmodern theology and cosmology. Taught alternately in French and English. *Instructor: Wood*

FREN 578 CONTEMPORARY FRENCH THOUGHT: TOWARD A SYMBOLIC ECONOMY (3-0-3)

Exploration of the idea of a "symbolic economy" that widens and transforms notions of production, exchange, and consumption in anthropology, semiotics, psychoanalysis, and literature. Includes Mauss and Levi-Strauss (on "exchange of goods," "exchange of words," and "exchange of women"), later developments of Bataille, Lacan, Baudrillard, Irigaray, and others, and the theory and practice of "economic criticism" (e.g., Balzac, Zola, Gide, and others). *Instructor: Goux*

FREN 579 MARX, BATAILLE, BAUDRILLARD (3-0-3)

Exploration of the shift in French thought in the 20th century from a Marxist political economy of class struggle and exploitation, through Bataille's "general economy" (e.g., economic activity as a cosmic phenomenon), to Baudrillard's "indetermination of the code" and "simulation" in postmodernity. *Instructor: Wood*

**FREN 580 20TH-CENTURY FRENCH THEORY FROM
SAUSSURE TO IRIGARAY I (3-0-3)**

Introduction to psychoanalytic, Marxist, existentialist, semiotic, poststructuralist, and feminist theoretical developments and their mobilization for interpretation and critical methodology. Taught alternately in French and English. *Instructors: Goux (French), Wood (English)*

**FREN 581 20TH-CENTURY FRENCH THEORY FROM
SAUSSURE TO IRIGARAY II (3-0-3)**

Continuation of FREN 580. Required for graduate students in French studies.

**FREN 582 WESTERN TRADITIONS/POSTCOLONIAL
CHALLENGES (3-0-3)**

Study of discourses of cultural affiliation, representations of exile and exoticism, and strategies of expression of transcultural experience in modern literature, painting, and film from Africa, the Caribbean, and France. Includes Memmi and Kane (on acculturation), Anderson and Bhabha (on nationalism and hybridity), Gauguin and Segalen (on exile), and Fromentin, Delacroix, and Djebbar (on the exotic gaze), as well as Oyono, Sembene, Alloula, Pelegri, Camus, and Saint-John Perse, among others. *Instructor: Aresu*

**FREN 583 SOCIOPOLITICAL INTERPRETATION OF
LITERATURE (3-0-3)**

Continuation of FREN 580. Required for graduate students in French studies. *Instructor: Goux*

**FREN 584(S) AESTHETIC THEORIES OF MODERNISM AND
POSTMODERNISM (3-0-3)**

Analysis of the crisis of “representation” and “subjectivity,” using French theories of aesthetic modernism and postmodernism, with emphasis on arguments of the avant-garde (e.g., cubism, abstraction, surrealism, existentialism, structuralism, and “Tel Quel”) and parallelism between literature, painting, and theater (and occasionally cinema and architecture). Includes Delaunay, Valéry, Breton, Artaud, Sartre, Barthes, Sollers, and Lyotard. *Instructor: Goux*

**FREN 586 MODERN LITERATURE AND LITERARY THEORY:
TOWARDS AN AESTHETICS OF THE
FRAGMENTARY (3-0-3)**

Study of the way in which fragmentation, as both an epistemological and a linguistic phenomenon, has become a crucial perspective through which to view not only literary but also philosophical and theoretical texts in the modern/postmodern period. Includes Baudelaire, Flaubert, Breton, Beckett, and Barthes. *Instructor: Harter*

FREN 588 EVOLUTION OF THE NOVEL (3-0-3)

Study of Camus, Butor, Duras, Robbe-Grillet, Simon, Sarraute, Yourcenar, Tournier, Sollers, and Modiano. Content varies from year to year. *Instructor: Aresu*

FREN 610(F) TOPICS IN LANGUAGE METHODOLOGY (3-1-4)

Exploration and analysis of a range of theories, issues, and problems in foreign language instruction. Areas of inquiry include the nature of language acquisition, pedagogical methods, instructional technologies, development of teaching materials, and testing/assessment. Offered every year. Required course for all graduate language teaching assistants. Also offered as GERM 510, LING 610, and SPAN 610. *Instructors: Barlow, Kecht*

FREN 800 THESIS RESEARCH (PH.D) (hours variable)

Geology and Geophysics (GEOL)

The Wiess School of Natural Sciences

GEOL 101(F) THE EARTH (3-0-3)

FOUNDATION COURSE: GROUP III

Study of the nature of the earth and the processes that change it. Required for geology and geophysics majors; may substitute GEOL 102, 107, or 108. GEOL 105 is a recommended corequisite. Offered in fall only. *Instructors: Anderson, Gordon, Levander, Wright*

GEOL 102(S) EVOLUTION OF THE EARTH (3-0-3)

FOUNDATION COURSE: GROUP III

Survey of the history of the earth and the evolution of its continents, ocean basins, life, and climate over the past 4.6 billion years. GEOL 101 recommended but not required. GEOL 105 is a recommended corequisite. Offered once per year. *Instructor: Wright Dunbar*

GEOL 103(F) FIELD TRIPS FOR THE EARTH (0-1-1)

DISTRIBUTION COURSE: GROUP III

Four evening lectures of one hour each prior to one long and one one-day field trip. Corequisite: GEOL 101. *Instructor: Heymann*

GEOL 105 INTRODUCTORY LAB FOR GEOLOGICAL SCIENCES (0-3-1 each semester)

DISTRIBUTION COURSE: GROUP III

Lab exercises in rocks, minerals, stratigraphy, paleontology, mapping, and plate tectonics. Normally taken with GEOL 101 or 102. Recommended before taking upper-level geology courses. *Instructor: Sisson*

GEOL 107(F) OCEANS AND GLOBAL CHANGE (3-0-3)

FOUNDATION COURSE: GROUP III

Overview of the impact of the ocean and ocean evolution on the earth's climate. Includes geological, physical, chemical, and biological aspects of change. Offered in alternate years. *Instructor: Droxler*

GEOL 108(S) CRISES OF THE EARTH (3-0-3)

FOUNDATION COURSE: GROUP III

Study of how geological and environmental crises have affected the earth throughout history. Includes meteorite impacts, global extinctions, volcanic eruptions, earthquakes, and the effect of humans on the environment, as well as an overview of the historical perspectives, scientific background, and development of these processes, the development of predictive scenarios, and society's adaptations to such hazards. Offered in alternate years. *Instructors: Leeman, Sawyer*

GEOL 202(S) GEOPHYSICS IN HUMAN AFFAIRS (3-0-3)

DISTRIBUTION COURSE: GROUP III

Survey of the historical development of geophysics. Includes application of geophysical methods to learn about the earth's interior and to explore for oil and other minerals. Open to nonmajors and majors. GEOL 101 recommended but not required. *Instructor: Talwani*

GEOL 214(S) THE PLANETS (3-0-3)

FOUNDATION COURSE: GROUP III

Overview of the physical, chemical, and geological development of the solar system from 4.6 billion years ago until today. Includes all planets and their major satellites, comets, and asteroids. Open to nonmajors. Prerequisite: GEOL 101. *Instructor: Heymann*

GEOL 311(F) MINERALOGY AND OPTICS (3-3-4)

DISTRIBUTION COURSE: GROUP III

Introduction to crystallography, crystal chemistry, systematics and classification, physical and chemical properties, distribution, occurrence and genesis of minerals, as well as optical mineralogy. *Instructor: Leeman*

GEOL 312(S) PETROLOGY (3-3-4)

Description and interpretation of igneous and metamorphic rocks, with lab emphasis on study of rock thin sections with petrographic microscope. Includes a one-weekend field trip. Prerequisite: GEOL 311. *Instructors: Wright, Sisson*

GEOL 314(S) PETROLOGY (3-0-3)

Same as GEOL 312 without a lab. *Instructors: Wright, Sisson*

GEOL 326(F) ENVIRONMENTAL GEOLOGY (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Examination of interrelations between humans and the geologic environment, with emphasis on geologic processes, hazards, and environmental management. Includes groundwater, soils, landslides, subsidence, water systems (e.g., river, coastal, and lacustrine environments), earthquakes and volcanic activity, mineral and energy resources, and waste disposal, as well as local field trips. Not offered every year. See also GEOL 426. *Instructor: Wright Dunbar*

GEOL 331(F) STRUCTURAL GEOLOGY (3-3-4)

Introduction to deformation mechanics, the structural analysis of faults and folds, and elementary tectonics, with lab emphasis on the practical use of structural analysis. Includes a one-weekend field trip. *Instructors: Avé Lallemant, Tikoff*

GEOL 332(S) SEDIMENTOLOGY (3-3-4)

Study of processes in sedimentation and sedimentary rocks. Includes both clastic and carbonate rocks and lab exercises, as well as a one-weekend field trip. *Instructors: Anderson, Droxler*

GEOL 333(F) STRUCTURAL GEOLOGY (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Same as GEOL 331 without a lab. Open to nonmajors only. *Instructors: Avé Lallemant, Tikoff*

GEOL 334(S) GEOLOGICAL AND GEOPHYSICAL TECHNIQUES (0-6-2)

Instruction in beginning field techniques. Includes seven labs, seven field days, and class meetings, culminating in the submission of a geologic map and report. Prerequisite: GEOL 331 or permission of instructor. *Instructors: Avé Lallemant, Tikoff, Zelt*

GEOL 341(F) THE OCEANS (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Introduction to oceanography. Includes a survey of geological, physical, and biological aspects, as well as one Saturday field trip. Offered in alternate years. *Instructor: Droxler*

GEOL 345(S) GEOLOGY OF NATIONAL PARKS (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Study of the geologic features and history of selected national parks and their relationship to regional geological events and processes. Optional early summer field trip. Prerequisite: any 100-level geology offering. Not offered every year. *Instructor: Wright Dunbar*

GEOL 353(S) ENVIRONMENTAL GEOCHEMISTRY (3-0-3)

Study of the theories and problems of chemical hazards in the environment due to natural processes, with emphasis on low-temperature aqueous systems.

GEOL 390 FIELD GEOLOGY (0-12-4)

Field course in geology held during summer only. Not offered every summer.

GEOL 403(F) ADVANCED PHYSICAL GEOLOGY (1-0-1)

Introduction to current research in geology. Includes description by department faculty members of their research and some of the techniques involved.

**GEOL 405(F) SEMINAR: CURRENT RESEARCH IN EARTH
GEOL 406(S) SCIENCES (1-0-1 each semester)**

Lectures on current research in various areas of geology/geophysics. May be repeated for credit

**GEOL 408(S) CURRENT TOPICS IN CONTINENTAL
TECTONICS (3-0-3)**

In-depth investigation of selected research problems. Content varies from year to year. Prerequisite: permission of instructor. Offered in alternate years. *Instructor: Wright*

GEOL 411(F) METAMORPHIC PETROLOGY (3-3-4)

Evaluation of sub-solidus mineral equilibria through study of natural assemblages, thermodynamic calculations, and experiments. Includes lab emphasis on thin section petrography. Not offered every year. Prerequisite: GEOL 312. *Instructor: Sisson*

GEOL 412(S) IGNEOUS PETROLOGY (3-3-4)

Evaluation of the evolution of igneous rocks in the earth's crust and mantle. Includes phase equilibria, experimental studies, and geochemistry, with lab emphasis on thin section petrography. Not offered every year. *Instructor: Leeman*

GEOL 413(F) ORGANIC GEOCHEMISTRY (3-0-3)

Study of the origin and evolution of petroleum and natural gas. Includes the fate of biogenic compounds in sedimentary rocks over geologic time. Not offered every year.

GEOL 415(S) ECONOMIC GEOLOGY—PETROLEUM (3-0-3)

Study of the geology of petroleum. Includes origin, migration, and accumulation, as well as government regulation and industry economics. Not offered every year.

GEOL 416(F) ECONOMIC GEOLOGY—MINERAL DEPOSITS (3-0-3)

Overview of metallic and nonmetallic mineral deposits, theories of their origin, and their classification. Includes the impact of government regulation, economics, production practices and exploration. Not offered every year. *Instructor: Sisson*

GEOL 418(S) GEOLOGICAL OCEANOGRAPHY (3-3-4)

Study of geological aspects of oceanography. Includes geomorphology, nearshore processes, seafloor spreading, plate tectonics, marine geophysics, marine sediments, and paleoceanography. Not offered every year. *Instructors: Anderson, Droxler*

GEOL 420(S) MARINE GEOPHYSICAL METHODS (hours variable)

Fieldwork, with emphasis on methods of seismic reflection data acquisition, processing, and analysis. Includes experiments carried out using research vessel, followed by processing and interpretation of data and presentation of findings. Not offered every year. *Instructors: Anderson, Sawyer*

**GEOL 421(F) DEEP-SEA SEDIMENTOLOGY/
PALEOCEANOGRAPHY (3-0-3)**

Study of the Mesozoic and Cenozoic evolution of the ocean system based on analyses of biogenic and terrigenous deep-sea sediments. Prerequisite: GEOL 332. *Instructor: Droxler*

GEOL 423(S) ANTARCTIC MARINE GEOLOGY (3-0-3)

Study of marine geologic principles and processes using examples from the southern oceans. Not offered every year. *Instructor: Anderson*

GEOL 426(F) ENVIRONMENTAL GEOLOGY (3-0-3)

Enriched version of GEOL 326. Completion of extra project required to receive credit at this level. May not receive credit for both GEOL 326 and 426.

GEOL 427(F) SEQUENCE STRATIGRAPHY (3-0-3)

Study of the principles of sequence stratigraphy (a new tool used to subdivide, correlate, and map sedimentary rocks within chronostratigraphically constrained genetic intervals) and its application to outcrop, well log, and seismic data. *Instructor: Vail*

GEOL 432(F) MICROPALAEONTOLOGY AND WELL LOG SEQUENCE STRATIGRAPHY (3-0-3)

Survey of basic concepts and procedures for interpreting stratigraphy on individual well logs and correlating between well logs. Includes the use of fundamentals of micropaleontology to determine the geologic age and environments of deposition and the use of well log sequence stratigraphic analysis to interpret depositional environments and lithofacies, to tie in with seismic data, and to correlate between wells. Not offered every year. *Instructor: Vail*

GEOL 438(S) SEDIMENTARY GEOCHEMISTRY AND MINERALOGY (3-0-3)

Study of the chemistry of environments of formation for the major sedimentary minerals and rocks and secular variations throughout geologic history. Not offered every year.

GEOL 441(S) GEOPHYSICAL DATA ANALYSIS (3-0-3)

Review of linear algebra and probability. Discrete inverse theory, data fitting, model parameter estimation, linear and nonlinear methods, model assessment, global optimization. Prerequisite: MATH 211, NSCI 230 or equivalent programming experience. Not offered every year. *Instructor: Zelt*

GEOL 442(F) EXPLORATION GEOPHYSICS (3-3-4)

Study of principles and procedures involved in geophysical exploration. Includes acquisition, processing, and interpretation of gravity, magnetic, and seismic data. *Instructor: Zelt*

GEOL 444(S) REFLECTION SEISMIC DATA PROCESSING LAB (1-3-2)

Experience with processing reflection seismic data. Includes seismic data organization, velocity analysis, stacking, filtering, deconvolution, migration, and display, using the Geophysical Computing Facilities DISCO seismic processing system. Prerequisite: GEOL 442. *Instructors: Levander, Sawyer*

GEOL 446(S) SOLID EARTH GEOPHYSICS (3-3-4)

Description and analysis of the gravitational, magnetic, thermal, and seismic properties of the earth, as well as their bearing on plate tectonics. *Instructors: Sawyer, Talwani*

GEOL 451(F) ANALYSIS OF ENVIRONMENTAL DATA (2-3-3)

Overview of statistics, geographical data display, contouring and kriging, time series analysis, and image processing, with emphasis on the application of these techniques to geological and environmental problems. Extensive computer use in lab required. Prerequisite: MATH 211. *Instructor: Sawyer*

GEOL 461(F) SEISMOLOGY I (3-0-3)

Study of the principles of elastic wave initiation, propagation, and reflection in ideal media and real rocks, with applications to exploration for hydrocarbons. MATH 212 recommended (may be taken concurrently). Prerequisites: MATH 211 and PHYS 101 and 102. Not offered every year. *Instructors: Levander, Symes*

GEOL 462(S) ADVANCED SOLID EARTH GEOPHYSICS (3-0-3)

Study of the forces that govern the motions and deformations in the earth and how they are constrained by geophysical and geological measurements. Prerequisites: MATH 211 and 212 and GEOL 446. Not offered every year. *Instructor: Gordon*

GEOL 463(F) ADVANCED STRUCTURAL GEOLOGY (3-3-4)

Examination of the mechanics of rock deformation in theory, experiments, and nature. *Instructors: Avé Lallemant, Tikoff*

GEOL 464(S) FUNDAMENTALS OF PLATE TECTONICS (3-0-3)

Introduction to plate tectonics theory. Includes geometric constraints to plate motions, driving mechanism, behavior at plate boundaries, and intraplate tectonism. *Instructor: Gordon*

GEOL 465(S) REGIONAL TECTONIC ANALYSIS (3-3-4)

Practical application of methods used in the tectonic analysis of deformed belts. Includes case studies of deformed belts from around the world, with emphasis on the use of map, stratigraphic, structural potential field, and seismic reflection data as a means of integrating surface and subsurface relations, as well as on the use of restorable structural sections and forward simulations in developing time-integrated, three-dimensional models. Not offered every year.

GEOL 471(F) ISOTOPE GEOLOGY (3-0-3)

Introduction to the principles, interpretation, and techniques of radiogenic isotope systems, with emphasis on geochronology applications, as well as on the use of isotopes in the study of the petrogenesis of igneous rocks. *Instructor: Wright*

GEOL 481(F) SENIOR RESEARCH IN GEOLOGY (hours variable)**GEOL 482(S)**

Advanced work adapted to the needs of the individual undergraduate student.

GEOL 491(F) SPECIAL STUDIES (hours variable)**GEOL 492(S)**

Study in specific fields for undergraduates under the guidance of a staff member. May be repeated for credit.

GEOL 501(F) SPECIAL STUDIES (hours variable)**GEOL 502(S)**

Advanced work in certain phases of geology adapted to the needs of individual graduate students. May be repeated for credit. Prerequisite: permission of department.

GEOL 503 SPECIAL STUDIES (hours variable)

See GEOL 501-502. Offered in the summer only. May be repeated for credit.

GEOL 504(F) CLASTIC SEDIMENTARY ENVIRONMENTS, PROCESSES, AND FACIES (3-0-3)

Study of modern and ancient sedimentary environments, with emphasis on fieldwork. Includes examination of depositional models in relation to climatic, oceanographic, and tectonic influences. *Instructor: Anderson*

GEOL 505(F) APPLIED SEDIMENTOLOGY (1-6-3)

Field investigation of the sedimentary deposits of northwestern New Mexico to provide graduate students in sedimentology with training in field methods, interpretation of sedimentary deposits and facies mapping. Prerequisite: GEOL 504. Not offered every year. *Instructor: Anderson*

GEOL 506(S) CARBONATE SEDIMENTOLOGY (3-0-4)

Characterization of modern and ancient, shallow and deep sedimentary environments and facies. Includes examination of different depositional models in relation both to climate and to hydrographic and geographic settings, as well as three field trips. Prerequisite: GEOL 332. *Instructor: Droxler*

GEOL 507-534 SEMINARS IN GEOLOGY (hours variable)

Content varies from year to year. May be repeated for credit.

GEOL 535(F) STABLE ISOTOPE GEOCHEMISTRY (3-0-3)

Review of the basic principles of isotope fractionation mechanisms and the distribution of isotopes, with emphasis on its significance to major geological problems. Not offered every year.

GEOL 537(F) ADVANCED SEDIMENTARY GEOLOGY (3-3-4)

Lecture, lab, and field problems in sedimentology and sedimentary petrography. Not offered every year.

GEOL 539(F) ADVANCED PETROLOGY (3-3-4 each semester)

GEOL 540(S)

Study of advanced topics in igneous and metamorphic petrology, with emphasis on staff interests. Includes rigorous examination of modern developments in physicochemical terms. May be repeated for credit. Prerequisite: GEOL 412 (or equivalent). Not offered every year.

GEOL 542(S) SEISMOLOGY II (3-0-3)

Review of elastodynamics. Calculation of synthetic seismograms for acoustic and elastic media using reflectivity, asymptotic, and finite difference methods. Migration of reflection data by finite difference. FK and boundary integral methods. Travel time inversion. GEOL 461 recommended. Prerequisites: GEOL 441 and 442 or CAAM 335 and 336. Also offered as CAAM 592. Not offered every year. *Instructors: Levander, Symes, Zelt*

GEOL 550(S) ADVANCED MINERALOGY AND CRYSTAL CHEMISTRY (3-0-3)

Study of advanced topics in crystal structure, chemistry, thermodynamics, and solution models. Includes detailed examination of important mineral groups such as feldspars, oxides, carbonates, and phyllosilicates. Not offered every year.

GEOL 561(F) ADVANCED TOPICS IN

GEOL 562(S) GEOPHYSICS (3-0-3 each semester)

Content varies from year to year. Includes convection, advanced wave propagation, tectonophysics, and inverse problems. May be repeated for credit. Not offered every year.

GEOL 568(S) STRUCTURAL ANALYSIS OF DEFORMED ROCKS (3-3-4)

Study of structures, textures, and fabrics of deformed rocks. Includes strain and kinematic analysis. *Instructor: Avé Lallemant*

GEOL 574(S) ELECTRON MICROPROBE/SCANNING ELECTRON MICROSCOPE (SEM): THEORY (2-2-2)

Survey of the principles, techniques, and applications of the electron microprobe/SEM, with emphasis on quantitative analysis and geological problems. Includes practical lab instruction and experience in analytical techniques. *Instructor: Sisson*

GEOL 579(F) PREPARATION OF M.A. THESIS

GEOL 580(S) PROPOSAL (0-9-3 each semester)

May not receive credit for both GEOL 579 and 580.

GEOL 589(F) PREPARATION OF PH.D. THESIS

GEOL 590(S) PROPOSAL (0-9-3 EACH SEMESTER)

May not receive credit for both GEOL 589 and 590.

GEOL 800 THESIS RESEARCH (HOURS VARIABLE)

German (GERM)

The School of Humanities/Department of German and Slavic Studies

GERM 101(F) ELEMENTARY GERMAN (3-1-4)

DISTRIBUTION COURSE: GROUP I

Instruction in basic communication skills through classroom activities and language lab. Includes speaking, reading, and writing German, practice in understanding spoken German, and an introduction to cultural aspects of German-speaking countries. Must complete GERM 102 to receive credit for GERM 101. *Instructor: Weissenberger*

GERM 102(S) ELEMENTARY GERMAN (3-1-4)

DISTRIBUTION COURSE: GROUP I

Continuation of GERM 101. Prerequisite: GERM 101. *Instructor: Weissenberger*

GERM 103 ELEMENTARY GERMAN (6-2-8)

DISTRIBUTION COURSE: GROUP I

Single summer course equivalent to combined GERM 101 and 102.

GERM 201(F) INTERMEDIATE GERMAN I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study to improve and reinforce communication skills (speaking, understanding, reading, and writing German) and to increase familiarity with German culture, with emphasis on the functional use of German through a variety of texts and audiovisual materials. *Instructors: Eifler, Spuler*

GERM 202(S) INTERMEDIATE GERMAN II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of GERM 201. *Instructors: Eifler, Spuler*

GERM 206 INTERMEDIATE GERMAN II (6-0-6)

DISTRIBUTION COURSE: GROUP I

Single summer course equivalent to combined GERM 201 and 202.

GERM 209 INDEPENDENT STUDY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies depending on student interests and the availability of instructors.

GERM 301(S) SCIENTIFIC GERMAN (3-0-3)

DISTRIBUTION COURSE: GROUP I

Readings of reports of current scientific research in Germany, supplemented by films. Includes independent readings in the student's chosen field. Prerequisite: second-year competence. Not offered 1997-98. *Instructor: Wilson*

GERM 302(F) ADVANCED SCIENTIFIC GERMAN (3-0-3)

DISTRIBUTION COURSE: GROUP I

Advanced version of GERM 301. Prerequisite: second-year competence. Not offered 1997-98. *Instructor: Wilson*

GERM 303 COMMERCIAL GERMAN (3-0-3)

DISTRIBUTION COURSE: GROUP I

Introduction to contemporary German economic texts and European contexts of potential use in an international business career, with emphasis on the specific economic language and situation of German business practices. Prerequisite: second-year competence or permission of instructor. Not offered 1997-98. *Instructor: Eifler*

GERM 305(F) COMPOSITION AND CONVERSATION I (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Discussions and compositions based on a variety of reading materials (e.g., current German newspapers and videos). Prerequisite: second-year competence. *Instructor: Spuler*

GERM 306(S) COMPOSITION AND CONVERSATION II (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Extensive practice in reading German texts, as well as oral analytic discussion. Includes collective work as a class on a translation project from German to English. Prerequisite: second-year competence. *Instructor: Eifler*

GERM 311(F) SURVEY OF GERMAN LITERATURE I (3-0-3)**DISTRIBUTION COURSE: GROUP I**

An introduction to the major social and cultural developments in Germany from 1750 to 1850, the period that marks the emergence of a specifically German cultural identity. The course will focus on the changed relationship of the individual to the state, the community, and the environment that accompany the intellectual, political, social, and technological revolutions of the period. Readings will encompass a wide range of literary and cultural texts, including works by Lessing, Goethe, Kant, Schiller, Kleist, Bettina von Arnim, Buechner, and Heine. *Instructor: Bledsoe*

GERM 312 SURVEY OF GERMAN LITERATURE II (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Introduction to pertinent movements and literary works from 1900 to the present. Not offered 1997-98. *Instructors: Eifler, Winkler*

GERM 322 SPECIAL TOPIC: GERMAN DETECTIVE STORY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Development of the German detective story from Romanticism to the present, with emphasis on the shift from metaphysical solutions to the acknowledgment of a void that leaves only the possibility of an accidental solution. Includes E.T.A. Hoffmann, Droste-Hulshoff Fontane, C. Goetz, Zuckmeyer, and Durrenmatt. Not offered 1997-98. *Instructor: Weissenberger*

GERM 341 THE AGE OF GOETHE: CLASSICAL WEIMAR AND ROMANTIC JENA (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of what many consider the high point of German literature and culture, Weimar classicism and early Romanticism, with emphasis on the writings of the classical Goethe and Schiller and Romantics such as the Schlegels, Novalis, and Tieck. Includes efforts to locate the texts and their authors within the historical context that many of their works try so hard to transcend. Not offered 1997-98. *Instructor: Bledsoe*

GERM 342 ROMANTICISM AND REALISM (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of how fantastic and grotesque events in Romanticism (e.g., Kleist, E.T.A. Hoffmann, "Bonaventura," and Eichendorff) or realism (e.g., Keller), which once reaffirmed a metaphysical world order, changed with the turn of the century and the beginning of modernity to demonstrate the opposite, namely the absurdity of life (e.g., Durrenmatt and Weiss). Not offered 1997-98. *Instructor: Weissenberger*

GERM 371 GERMANY DURING THE WEIMAR REPUBLIC, 1919-1933 (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of the various contradictory cultural phenomena (e.g., literature, fine arts, social theory, political ideologies, and mass entertainment) present during Germany's first republic, with emphasis on the role of Berlin as a new cultural metropolis and tensions between "elitist modernism" and "proto-fascist traditions." Not offered 1997-98. *Instructor: Winkler*

GERM 372(F) GERMAN LITERATURE, 1945-1989 (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of postwar authors who began their careers after 1945. Includes German, Austrian, and Swiss writers. *Instructor: Winkler*

GERM 375 CONTEMPORARY GERMANY: FROM POSTWAR TO POSTUNIFICATION (3-0-3)

DISTRIBUTION COURSE: GROUP I

Historical examination of former East and West Germany and the shape they have assumed since unification in 1989-90. Includes examples from documentary sources, literature, and film, with emphasis on how GDR and FRG authors and filmmakers came to grips with their fascist past, how they depicted their ideologically different environments, and what cultural resonance has developed since the merger of the two states. Also offered as GMAN 376 (taught in English). Not offered 1997-98. *Instructor: Eifler*

GERM 378 GERMAN CINEMA (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the filmic productions since 1960 that established the New German Cinema. Include Fassbinder, Herzog, and Wenders, as well as significant contributions by women filmmakers such as Sander, Treut, and Trotta, with emphasis on a comparison and contextualization of cinematic themes, filmic styles, and theoretical discussions relative to contemporary European cinema. Also offered as GMAN 391 (taught in English). Not offered 1997-98. *Instructor: Eifler*

GERM 381 DRAMA AND DRAMATURGY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of German dramas written from 1750 to the present, with emphasis on the way the productions and filmings of the plays realize certain interpretations. Includes Lessing, Goethe Kleist, Buchner, Hofmannsthal, Brecht, and Weiss. Not offered 1997-98. *Instructor: Bledsoe*

GERM 391(S) SPECIAL TOPIC: GERMAN CULTURE IN THE 20TH CENTURY (3-0-3)

DISTRIBUTION COURSE: GROUP I

A survey retrospective of the distinctive developments and cultural issues in Germany (West and East) during the past 50 years. Readings include literary as well as sociological, philosophical, and other analytical texts. Special emphasis on distinctly German continuities within European traditions. This course is open to all and will be taught in English. German majors may complete readings and papers in German. *Instructor: Winkler*

GERM 392(S) SPECIAL TOPIC: GERMAN FAIRY TALE-OLD AND NEW (3-0-3)

DISTRIBUTION COURSE: GROUP I

Discussion of several prototypes from the fairy-tale collection of the Brothers Grimm and the subsequent development of the "literary" fairy tale from Goethe and the Romantics to the 20th century. Taught in German. Also offered as GMAN 392. *Instructor: Weissenberger*

GERM 401/402 INDEPENDENT WORK IN GERMAN LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Qualified students work on projects of their choice under the supervision of individual instructor with approval of the undergraduate adviser.

GERM 403/404 HONOR THESIS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Independent research projects by outstanding German majors leading to a substantial honor essay, undertaken in close cooperation with a departmental faculty member, who must first approve the thesis proposal.

GERM 405(F) INTRODUCTION TO GOTHIC AND OLD HIGH GERMAN (3-0-3)

DISTRIBUTION COURSE: GROUP I

Basic reading in language and literature taught in German. Open to graduate students for credit.

*Instructor: Wilson***GERM 411(F) INTRODUCTION TO MIDDLE HIGH GERMAN (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Study of readings in the original 13th-century language from the first golden age of German literature. Includes selections from the epics *Nibelungenlied* and *Parzival* and the lyrical poetry of Walther von der Vogelweid and other Minnesang poets. Not offered 1997-98. *Instructor: Wilson***GERM 412(S) MIDDLE HIGH GERMAN LYRIC AND EPIC POETRY (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Study of selections in the original Middle High German from two of the great medieval epics: *Parzival*, the quest for the Holy Grail, and *Tristan*, celebrating the overwhelming power of illicit love. *Instructor: Wilson***GERM 421 GERMAN LITERATURE: MEDIEVAL GERMANIC LITERATURE AND MYTHOLOGY (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Study of selections from major works of Old and Middle High German (e.g., *Nibelungenlied*, Arthurian romances, and Minnesang) and Old Icelandic (e.g., sagas and mythological poetry). All works in modern German translations. Not offered 1997-98. *Instructor: Wilson***GERM 422 THE INTERACTION OF GERMAN AND WENDISH (SORBIAN) IN TEXAS (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Transliteration and translation of 19th-century manuscripts. Acquaintance with a Slavic language required. Not offered 1997-98. *Instructor: Wilson***GERM 431 ADVANCED STYLISTICS (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Analyses of different narrative styles. Prerequisite: German 305 or permission of instructor. Not offered 1997-98.

GERM 432(S) SPECIAL TOPICS IN GERMANIC LINGUISTICS: OLD AND MODERN ICELANDIC (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of early Scandinavian language and literature from the 12th and 13th centuries (e.g., runic inscriptions, prose sagas of the Viking era, and the Eddic poetry of Germanic mythology). Includes comparisons with modern Icelandic, which has remained unchanged in grammar and written representations but has undergone unique phonological changes. Not offered 1997-98. *Instructor: Wilson***GERM 433(F) LINGUISTIC STRUCTURE OF GERMAN (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Synchronic study of modern German phonology, syntax, and semantics, including aspects of discourse structure. Not offered 1997-98. *Instructor: Copeland***GERM 434(F) HISTORY OF THE GERMAN LANGUAGE (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Survey of aspects of the history of German phonology, syntax, and semantics (with related systems) from its proto-Indo-European origins to the present. Also offered as LING 434. *Instructor: Copeland*

GERM 436(F) SPECIAL TOPICS: HARTMANN VON AUE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of readings in the original 13th-century language of works by Hartmann von Aue, the most prolific writer of the first golden age of German literature. Includes selections from his Arthurian romances (e.g., *Erec* and *Iwein*), his religious fiction (e.g., *Gregorius* and *Der arme Heinrich*), and his Minnesang love poetry. Prerequisite: third-year competence. Not offered 1997-98. *Instructor: Wilson*

GERM 437(F) ADAPTATIONS: FROM TEXT TO FILM (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Many novels and short stories by prominent German writers have been brought to the screen. This course will study T. Mann's *Death in Venice*, Doebelin's *Alexanderplatz*, K. Mann's *Mephisto*, Grass' *Blechtrommel*, Boell's *Katarina Blum*, Frisch's *Homo Faber*, Bachmann's *Malina*, and others. Questions will be assessed such as what the two media might have in common, how they express differently, and how author versus film director should be perceived. Also offered as GMAN 406. *Instructor: Eifler*

GERM 454 GERMAN WOMEN AUTHORS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Critical analysis of literature and films by German-speaking feminists in theoretical and sociopolitical contexts. Includes writers such as Bachmann, Wolf, Morgner, Maron, and Jelinek, as well as filmmakers such as Sander, Bruckner, Export, and Treut. May be repeated for credit. Not offered 1997-98. *Instructor: Eifler*

GERM 500 GRADUATE RESEARCH (hours variable)

Graduate research and thesis in partial fulfillment for the degree of Master of Arts.

GERM 510(F) SEMINAR: TOPICS IN LANGUAGE METHODOLOGY (3-1-4)

Exploration and analysis of a range of theories, issues, and problems in foreign language instruction. Areas of inquiry include: the nature of language acquisition, pedagogical methods, instructional technologies, development of teaching materials, and testing/assessment. Required course for all graduate language teaching assistants. Also offered as FREN 610, LING 610, and SPAN 610. *Instructor: Kecht*

GERM 511 TEACHING GERMAN: PRAXIS AND THEORY (hours variable)

Practical and theoretical considerations of foreign language teaching methodologies, instructional planning and evaluation, textbook evaluation and use, testing methods and design, and course planning. Peer instruction observations required.

GERM 512 GRADUATE INDEPENDENT WORK (hours variable)

Prerequisite: approval of the graduate adviser.

GERM 521 GOTHIC (3-0-3)

Study of the Gothic language, its significance in Germanic subfamily, readings from the Bible translation of Bishop Ulfila (4th century). Not offered 1997-98. *Instructor: Wilson*

GERM 522 OLD HIGH GERMAN (3-0-3)

Study of the language and literature of the Old High German period (8th-11th centuries). Includes texts from the pagan and the monastic traditions. Not offered 1997-98. *Instructor: Wilson*

GERM 526(S) SPECIAL TOPIC: MEDIEVAL LITERATURE (3-0-3)

Exploration of specific aspects and problems of medieval literature. The topics vary from year to year. May be repeated for credit. Not offered 1997-98. *Instructor: Wilson*

GERM 531 LINGUISTIC STRUCTURE OF GERMAN (3-0-3)

Synchronic study of modern German syntax, phonology, and semantics, including discourse structure. Not offered 1997-98. *Instructor: Wilson*

GERM 532 HISTORY OF THE GERMAN LANGUAGE (3-0-3)

Graduate version of GERM 434. Not offered 1997-98. *Instructors: Copeland, Wilson*

GERM 561 LITERARY THEORY (3-0-3)

Introduction to major modes of criticism. Not offered 1997-98.

GERM 563(F) LITERARY GENRES: NONFICTIONAL PROSE IN EXILE (3-0-3)

Aspects of realism. A literary survey of poetic realism, naturalism, *neue sachlichkeit*, inner immigration, exile literature, verismus, and neorealism. Also offered as GMAN 565. *Instructor: Weissenberger*

GERM 565(F) SPECIAL TOPIC: CONTEMPORARY GERMAN LITERATURE (3-0-3)

Content varies from year to year. The course will discuss authors such as Thomas Bernhard, Friedrich Delius, Max Frisch, Botho Strauß, Peter Weiss, etc. Not offered 1997-98. *Instructor: Winkler*

GERM 566(S) SPECIAL TOPIC: TURN-OF-THE-CENTURY LITERATURE (3-0-3)

Examination of specific aspects, problems, and authors of the period. Not offered 1997-98. *Instructor: Winkler*

GERM 571(S) THE RISE OF THE MODERN NOVEL (3-0-3)

The course will examine the rise of the modern novel in Germany during the Enlightenment and trace developments into the first half of the 19th century, with emphasis on changing notions of subjectivity. May be repeated for credit. *Instructor: Bledsoe*

GERM 572(F) GERMANY DURING THE WEIMAR REPUBLIC, 1919-1933 (3-0-3)

Graduate version of GERM 371. Not offered 1997-98. *Instructor: Winkler*

GERM 578 NEW GERMAN CINEMA (3-0-3)

Graduate version of GERM 378. Not offered 1997-98. *Instructor: Eifler*

GERM 591(S) CONTEMPORARY GERMANY: RESULTS OF POSTUNIFICATION (3-0-3)

Review of heated German cultural debates current during "Abwicklungs" (the changeover from East to West), with emphasis on an assessment of contextual aspects such as the sudden surge of biographical writing by former GDR authors (e.g., Kant, De Bruyn, and Muller), the unexpectedly numerous STASI-involvements, and the DEFA-film termination. Includes analyses of postunification literature, particularly the work of Wolf and Grass. Not offered 1997-98. *Instructor: Eifler*

GERM 592 SELECTED PROBLEMS IN MODERN LITERATURE (3-0-3)

Content varies from year to year. Not offered 1997-98. *Instructor: Eifler*

GERM 600 GRADUATE RESEARCH (hours variable)

Prerequisite: approval of the graduate adviser.

GERM 700 GRADUATE SUMMER RESEARCH (hours variable)

Prerequisite: approval of the graduate adviser.

GERM 800 GRADUATE RESEARCH (hours variable)

Graduate research and dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Germanics (GMAN)

The School of Humanities/Department of German and Slavic Studies

All courses are taught in English.

GMAN 313 NATIONAL SOCIALISM AND EXILE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Critical discussions of life under German fascism and the survival of German culture in exile. Not offered 1997-98. *Instructor: Winkler*

GMAN 314 WEIMAR REPUBLIC AND THE AVANT-GARDE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Intensive survey of the complexity of Germany's intellectual, artistic, cultural, and sociopolitical life from 1918 to 1933. Not offered 1997-98. *Instructor: Winkler*

GMAN 321(F) DISCOURSE IN ALIENATION: FROM KAFKA TO THE HOLOCAUST, 1910-1945 (3-0-3)

DISTRIBUTION COURSE: GROUP I

Examination of the sociopolitical and economic upheaval and the religious and intellectual ferment marking the period from 1910 to 1945. Includes literature of artistic experimentation (e.g., expressionism, Kafka, and Musil) or of forced ideological stabilization (e.g., fascism), with emphasis on Holocaust literature as the ultimate clash of the two. Not offered 1997-98. *Instructor: Weissenberger*

GMAN 351(F) SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

GMAN 362 SPECIAL TOPIC: MODERN GERMAN LITERATURE IN TRANSLATION (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

GMAN 376 CONTEMPORARY GERMANY: FROM POSTWAR TO POSTUNIFICATION (3-0-3)

DISTRIBUTION COURSE: GROUP I

Historical examination of former East and West Germany and the shape they have assumed since unification in 1989-90. Includes examples from documentary sources, literature, and film, with emphasis on how GDR and FRG authors and filmmakers came to grips with their fascist past, how they depicted their ideologically different environments, and what cultural resonance has developed since the merger of the two states. All films subtitled. Also offered as GERM 375. Not offered 1997-98. *Instructor: Eifler*

GMAN 391 GERMAN CINEMA (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of the filmic productions since 1960 that established the New German Cinema. Includes Fassbinder, Herzog, and Wenders, as well as significant contributions by women filmmakers such as Sander, Treut, and Trotta, with emphasis on a comparison and contextualization of cinematic themes, filmic styles, and theoretical discussions relative to contemporary European cinema. All films subtitled. Also offered as GERM 378. Not offered 1997-98. *Instructor: Eifler*

GMAN 392(S) SPECIAL TOPIC: GERMAN FAIRY TALE-OLD AND NEW (IN TRANSLATION) (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Discussion of several prototypes from the fairy-tale collection of the Brothers Grimm and the subsequent development of the "literary" fairy tale from Goethe and the Romantics to the 20th century. Also offered as GERM 392. *Instructor: Weissenberger*

GMAN 402(S) SPECIAL TOPICS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

GMAN 406(F) ADAPTATIONS: FROM TEXT TO FILM (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Many novels and short stories by prominent German writers have been brought to the screen. This course will study T. Mann's *Death in Venice*, Doebelin's *Alexanderplatz*, K. Mann's *Mephisto*, Grass' *Blechtrommel*, Boell's *Katarina Blum*, Frisch's *Homo Faber*, Bachmann's *Malina*, and others. Questions will be assessed such as what the two media might have in common, how they express differently, and how author versus film director should be perceived. Also offered as GERM 437. *Instructor: Eifler*

GMAN 565(F) LITERARY GENRES: NONFICTIONAL PROSE IN EXILE (3-0-3)

Aspect of realism. A literary survey of poetic realism, naturalism, neue sachlichkeit, inner immigration, exile literature, verismus, and neorealism. Also offered as GERM 563. *Instructor: Weissenberger*

Greek (GREE)**The School of Humanities/Department of Hispanic and Classical Studies****GREE 101(F) INTRODUCTION TO ANCIENT GREEK I (3-0-3)****DISTRIBUTION COURSE: GROUP I**

Instructor: Beck

GREE 102(S) INTRODUCTION TO ANCIENT GREEK II (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Instructor: Beck

GREE 201(F) INTERMEDIATE GREEK I (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Review of forms and syntax followed by readings in Plato's *Apology*. *Instructor: Yunis*

GREE 202(S) INTERMEDIATE GREEK II (3-0-3)

Not offered 1997-98.

GREE 301(F) ADVANCED GREEK I (3-0-3)

Not offered 1997-98.

GREE 302(S) ADVANCED GREEK II (3-0-3)

Not offered 1997-98.

GREE 491(F) DIRECTED READING (3-0-3 each semester)**GREE 492(S)**Independent work for qualified juniors and seniors in genres or authors not presented in other courses. *Instructor: Yunis (fall)*

History of Art and Architecture (HART)

The School of Humanities/Department of Art and Art History

HART 205(F) INTRODUCTION TO THE HISTORY OF WESTERN ART (4-0-4)

DISTRIBUTION COURSE: GROUP I

Survey of painting, sculpture, and architecture from the Paleolithic period to the 15th century. One additional hour of tutorial per week assigned during first week. Required for art history majors.

*Instructors: Neagley, Widrig***HART 206(S) INTRODUCTION TO THE HISTORY OF WESTERN ART** (4-0-4)

DISTRIBUTION COURSE: GROUP I

Survey of painting, sculpture, and architecture from the Renaissance through the 20th century. One additional hour of tutorial per week assigned during first week. Required for art history majors.

*Instructors: Camfield, Manca***HART 209(S) INTRODUCTION TO ASIAN ART** (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of the art of Asia from the Neolithic period to the present.

HART 218(S) HISTORY OF FILM (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of classic films from both the silent and the sound eras, with emphasis on technique, theory, principles of criticism, and their relationship to art history in general. Includes Griffith, Eisenstein, Chaplin, Stroheim, Sternberg, Renoir, Renais, Godard, Bergman, and others. *Instructor: McEvilley***HART 291-295 SPECIAL TOPICS** (3-0-3)

Studies in art history at the introductory level or in special research and reading. May be used in awarding transfer credit. Prerequisite: permission of instructor.

HART 296(S) SPECIAL TOPICS IN FILM HISTORY (3-0-3)Exploration of film, with emphasis on such topics as auteur theory, directorial signature, film and semiotics, film and social control, film and revolution, film and Christianity, surrealist film, and film and the other arts. *Instructor: McEvilley***HART 304(F) ART AND ARCHAEOLOGY OF THE PREHISTORIC AEGEAN** (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of the material culture of Aegean civilizations from the Neolithic era to the end of the Bronze Age (c. 6000-1000 B.C.), with emphasis on the Minoan and Mycenaean cultures. Includes their place within the larger Mediterranean world, as well as their legacy to ancient Greece. HART 205 recommended. *Instructor: Mersereau***HART 305(F) GREEK ART AND ARCHAEOLOGY I** (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the material culture and society of early Greece, from its origins in the Greek "Dark Ages" through the crucial and formative geometric, orientalizzing, and archaic periods (c. 1000-480 B.C.). HART 205 and 304 recommended. *Instructor: Mersereau*

HART 306(S) GREEK ART AND ARCHAEOLOGY II (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of the material culture and society of classical and Hellenistic Greece, beginning with the 5th century B.C. and following developments and changes throughout the 4th century to the age of Alexander the Great and his successors. HART 205 recommended. Prerequisite: HART 305 or permission of instructor. *Instructor: Mersereau*

HART 307 ETRUSCAN AND EARLY ROMAN ART AND ARCHAEOLOGY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of art, architecture, and civilization in Italy from prehistoric times through the Etruscans and the early Roman republic. Not offered 1997-98. *Instructor: Mersereau*

HART 308 ROMAN ART AND ARCHAEOLOGY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of the architecture, sculpture, and painting of the ancient Romans from the founding of Rome and the republic through the imperial era to the age of Constantine, with emphasis on cultural context and interaction. Includes the entire European and Mediterranean worlds encompassed in the Roman empire. HART 205 recommended. Prerequisite: HART 306 or permission of instructor. Not offered 1997-98. *Instructor: Mersereau*

HART 309(S) LATE ANTIQUE/EARLY CHRISTIAN ART AND ARCHITECTURE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Examination of the accommodations made by 3rd-century A.D. abstraction and continuing Hellenism to Christian content in the centuries following Constantine's Edict of Milan in 313. Includes questions of interaction between the "Cult of the Emperor" and Christianity as the prescribed state religion. *Instructor: Widrig*

HART 317(S) EARLY MEDIEVAL ART, FROM 5TH CENTURY TO ROMANESQUE PERIOD (3-0-3)

Study of medieval art, with emphasis in part 1 on the art and architecture produced in Europe during the Dark Ages (e.g., the work of the Visigoths, Celts, Anglo-Saxons, Merovingians, Carolingians, and Ottonians) and in part 2 on the major revival of art and architecture in the medieval monasteries of the Romanesque period. Not offered 1997-98. *Instructor: Neagley*

HART 319(S) GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1140-1300: THE AGE OF CATHEDRALS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Examination of the full array of sacred art and architecture produced in the early and high gothic periods in northern Europe. Includes cathedral architecture, sculpture, stained glass, manuscripts, and metalwork studied in relationship to the expansion of royal and episcopal power. Not offered 1997-98. *Instructor: Neagley*

HART 321(S) ART AND THE MIND (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of topics in art history, criticism, aesthetics, philosophy, and the psychology of art. Previous art history courses desirable but not required. *Instructor: McEvilley*

HART 330(F) INTRODUCTION TO FILM (4-0-4)

Introduction to the art and aesthetics of film as an artifact produced within certain social contexts. Includes style, narration, mise-en-scène, editing, sound, and ideology in classical Hollywood cinema, as well as in independent, alternative, nonfiction, and Third World cinemas. *Instructor: Naficy*

HART 331(S) FILM AND TV AUTHORS: KUBRICK, SCORSESE, PENN (4-0-4)

Examination of theories and issues of authorship in film and television. Includes a structuralist and poststructuralist reading of the work of selected filmmakers in the context of the social issues of their times. *Instructor: Naficy*

(0-0-0) = class hours/week - lab hours/week - credit hours/semester

HART 338(S) INTRODUCTION TO TELEVISION AND VIDEO (3-0-3)

Overview of the history of American television and video, with emphasis on milestone genres, programs, and videos in the context of socioeconomic and political events and contemporary discourses. Includes mainstream TV and newer forms such as cable TV, video art, and ethnic TV. Not offered 1997-98. *Instructor: Naficy*

HART 345(F) RENAISSANCE AND BAROQUE ARCHITECTURE IN ITALY: A TALE OF THREE CITIES AND THREE CENTURIES (3-0-3)

The course first considers architecture and planning in 15th-century Florence, moves on to 16th-century Rome before the Sack of 1527, then looks at a personally interpreted classicism that transforms Rome in the 17th century, and, finally, evaluates for the future the new directions that come to the fore in the area around Turin during the late 17th/early 18th centuries. *Instructor: Widrig*

HART 346(S) 19TH- AND 20TH-CENTURY ARCHITECTURAL HISTORY (3-0-3)

Survey of the history and theories of modern architecture. Also offered as ARCH 346. *Instructor: Gamard*

HART 356(S) 20TH-CENTURY AMERICAN ART (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of painting, sculpture, photography, and architecture in the U.S. from c. 1900 to 1940, with emphasis on painting. Includes European and Latin American art as relevant. Not offered 1997-98. *Instructor: Camfield*

HART 358(S) REPRESENTING HISTORY IN AMERICAN ART, FROM COLONIAL TIMES TO 1900 (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of how history has been thematized in American art, with emphasis on the 18th and 19th centuries. Includes painting, architecture, sculpture, photography, and decorative arts within a broad social framework and within the context of other cultural expressions (e.g., historical pageantry, novels, and historical nonfiction). Not offered 1997-98.

HART 361(S) ARTS OF CHINA (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of Chinese painting, sculpture, and decorative arts, with emphasis on recent archaeological finds. Prerequisite: HART 209 or permission of instructor.

HART 365(S) ARTS OF JAPAN (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey from pre-Buddhist Japanese art, to the impact of Chinese and Korean culture on art in Japan, to the emergence of indigenous Japanese expression in the arts and architecture. Prerequisite: HART 209 or permission of instructor. Not offered 1997-98.

HART 370(S) LATE GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1300-1500: PRIVATE, PUBLIC, AND RELIGIOUS LIFE IN THE COURT, THE CITY, AND THE CHURCH (3-0-3)

Examination of art and architecture produced in the late gothic period within three distinct settings—the court, the city, and the church. Includes private, public, and religious life as expressed in the objects, architecture, and decoration of the castle and palace, the house, the city hall and hospital, and the chapel and parish church. Not offered 1997-98. *Instructor: Neagley*

HART 375(F) ART OF THE NORTHERN RENAISSANCE (3-0-3)

Study of art in northern Europe from Jan van Eyck to Peter Bruegel. Not offered 1997-98. *Instructor: Manca*

HART 378(S) JAN VAN EYCK: PROBLEMS OF INTERPRETATION (3-0-3)

Seminar and in-depth research on the art and historiography of the early Netherlandish painter Jan van Eyck. Not offered 1997-98. *Instructor: Neagley*

HART 380(S) INVESTIGATING DRAWING: THEORY AND PRACTICE (3-0-3)

Study of the basic principles of drawing and representation, with emphasis on studio practice, art history, and theory. Includes categories of representation (e.g., still life, landscape, and figure), the process of making drawings, and related readings, group discussions, and writing assignments. May substitute HART 380 for ARTS 225 as a studio prerequisite. Corequisite: ARTS 380. Not offered 1997-98.

HART 404(S) THE CITY OF ATHENS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Interdisciplinary seminar on ancient Athens, from the Neolithic to the Roman periods, with emphasis on the utilization of space and resources. Includes the monuments of classical Athens in the 5th century B.C., especially architectural forms and their political, social, and religious functions. Prerequisites: HART 305 and 306 or permission of instructor. *Instructor: Mersereau*

HART 411(F) EARLY RENAISSANCE ART IN ITALY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of Italian art and architecture from Giotto to Botticelli, with an emphasis on painting and sculpture in the 15th century. Not offered 1997-98. *Instructor: Manca*

HART 412(S) THE HIGH RENAISSANCE AND MANNERISM IN ITALY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of the High Renaissance, with emphasis on its leading masters (e.g., Leonardo, Raphael, Bramante, Michelangelo, and Titian). Includes a study of mannerism, the stylish art produced after the first quarter of the 16th century. *Instructor: Manca*

HART 417(S) MASTERS OF THE BAROQUE ERA (3-0-3)

Study of the works of the greatest painters and sculptors in Europe during the baroque period. Includes Rembrandt, Rubens, Caravaggio, Poussin, Claude, and Velazquez. Not offered 1997-98. *Instructor: Manca*

HART 419(F) THE 18TH CENTURY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of the art and architecture of the Age of Enlightenment. Includes rococo, neoclassicism, and early romanticism. Not offered 1997-98.

HART 439(S) DOCUMENTARY AND ETHNOGRAPHIC FILM (4-0-4)

Overview of the history of documentary and ethnographic cinema from a worldwide perspective. Includes both canonical and alternative films and film movements, with emphasis on the shifting and overlapping boundaries of fiction and nonfiction genres. Limited enrollment. Also offered as ANTH 439. *Instructor: Naficy*

HART 440(F) NON-WESTERN CINEMA: THIRD WORLD CINEMAS (4-0-4)

Study of significant national cinemas, film movements, and filmmakers of the Third World from Africa to Latin America and from the Middle East to China. Includes colonial and postcolonial discourses. Limited enrollment. Also offered as ANTH 440. *Instructor: Naficy*

HART 461(S) 19TH-CENTURY ART (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of major developments in painting and sculpture from late 18th-century neoclassicism and romanticism through realism, impressionism, and post-impressionism. Includes architecture, photography, and decorative arts. Not offered 1997-98.

HART 463(S) TRENDS IN CONTEMPORARY ART (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of trends in American and European painting and sculpture from abstract expressionism to the present, with emphasis on American art and criticism. Prerequisite: HART 475 or permission of instructor. *Instructor: Camfield*

HART 471(S) CULTURE, MEDIA, SOCIETY: EXILE CINEMA (4-0-4)

Examination of cultural productions as vehicles for communication across national, cultural, and other boundaries, using contemporary theories of culture and media. Includes the creation of meaning and cultural capital, the representation of minority and alternative views, and the construction of individual and group identities. Also offered as ANTH 471. Not offered 1997-98.

Instructor: Naficy

HART 475(F) EUROPEAN 20TH-CENTURY ART (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of major developments in painting and sculpture from the 1880s to the 1940s. Includes impressionism and post-impressionism, expressionism, cubism, abstraction, Dada, and surrealism, with a brief consideration of architecture and photography. Not offered 1997-98. *Instructor: Camfield*

HART 480 THEORETICAL PERSPECTIVES ON THE VISUAL ARTS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of overlapping themes central in the history of art, using texts from Plato to postmodernism. Includes the use of biography, style, connoisseurship, quality, the social basis of art, theories of change in the arts, psychology, iconography, and the modernist canon and postmodern challenges to that canon, as well as race, gender, class, authorship, and audience.

Instructor: Camfield

HART 483(F) ARCHAEOLOGICAL FIELDWORK AND**HART 484(S) RESEARCH (3-0-3 each semester)**

DISTRIBUTION COURSE: GROUP I

Application of fieldwork and research to specific archaeological problems. *Instructor: Widrig*

HART 489(S) LEONARDO AND MICHELANGELO (3-0-3)

Study of the art and thought of the two greatest geniuses of the Italian Renaissance. Not offered 1997-98. *Instructor: Manca*

HART 492 SPECIAL TOPICS: FOUR MODERN MASTERS (3-0-3)

Exploration of the art, life, context, and criticism of Picasso, Duchamp, Ernst, and Mondrian. Prerequisite: HART 475 or permission of instructor. *Instructor: Camfield*

HART 494 THE GOTHIC PORTAL (3-0-3)

Seminar on the form and meaning of sculptural programs attached to French gothic cathedrals such as Chartres, Reims, and Amiens. Includes issues of iconography, style, and production, as well as more recent concerns of narrative, reception, and audience, all within the context of medieval church doctrine and political and social life. Not offered 1997-98. *Instructor: Neagley*

HART 495(F) MUSEUM INTERN PROGRAM (hours variable)**HART 496(S)**

Prerequisite: permission of instructor.

HART 497(F) SENIOR THESIS (3-0-3 each semester)**HART 498(S)**

Completion of a thesis under the direction of a member of the faculty. Open to senior art majors only. Prerequisite: permission of faculty.

HART 499(F) INDEPENDENT STUDY (3-0-3)

HART 504(S) THE CITY OF ATHENS (3-0-3)

Graduate version of HART 404.

HART 509(S) LATE ANTIQUE/EARLY CHRISTIAN ART AND ARCHITECTURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Graduate version of HART 309.

HART 539(S) DOCUMENTARY AND ETHNOGRAPHIC FILM (4-0-4)

Graduate version of HART 439. Also offered as ANTH 539.

HART 540(F) NON-WESTERN CINEMA: THIRD WORLD CINEMAS (3-0-3)

Graduate version of HART 440. Also offered as ANTH 540.

HART 545(F) GRADUATE SEMINAR—THE RENAISSANCE VILLA (3-0-3)

DISTRIBUTION COURSE: GROUP I

An investigation of the sources in antiquity, both conceptual and physical, of the Renaissance villa. Architectural form will be discussed as it relates to social and economic function. The villa designs of Palladio will serve as the Renaissance paradigm. A consideration of how the modest English country house of the 19th century and finally the present day suburban dwelling represent an extension and evolution of the Renaissance ideal will follow. Open to undergraduates with permission of instructor. *Instructor: Widrig*

HART 571 CULTURE, MEDIA, SOCIETY: EXILE CINEMA (4-0-4)

Graduate version of HART 471. Also offered as ANTH 571.

HART 575(F) TOPICS IN MODERN ART (3-0-3)*Instructor: Camfield***HART 580 THEORETICAL PERSPECTIVES ON THE VISUAL ARTS (3-0-3)**Graduate version of HART 480. *Instructor: Camfield***HART 583(F) ARCHAEOLOGICAL FIELDWORK AND****HART 584(S) RESEARCH (3-0-3 each semester)**Graduate versions of HART 483 and 484. *Instructor: Widrig***HART 585(F) INDEPENDENT READING (3-0-3 each semester)****HART 586(S)****HART 591(F) MASTER OF ARTS THESIS (hours variable)****HART 592(S)**

Graduate-level courses or special research and reading for master's thesis. Prerequisite: permission of instructor.

HART 593-595 SPECIAL TOPICS (3-0-3 each semester)**HART 597(F) INTERNSHIP PROGRAM (hours variable)****HART 598(S)**

See HART 495 and 496. Prerequisite: permission of instructor.

HART 800 THESIS AND RESEARCH (hours variable)*Instructor: Manca*

Health Sciences (HEAL)

The School of Humanities/Department of Human Performance and Health Sciences

HEAL 103(F) NUTRITION (3-0-3)

Study of concepts underlying the science of nutrition. Includes food composition, calories and needs for energy, special nutrients, and nutritional deficiencies.

HEAL 119(F) CONCEPTS IN HEALTH SCIENCE (3-0-3)

Introduction to health science, with emphasis on acquainting prospective health educators with the structure and function of health in our society. *Instructor: Yost*

HEAL 201(F) INTRODUCTION TO ENVIRONMENTAL SYSTEMS (3-3-4) **DISTRIBUTION COURSE: GROUP III**

Study of chemical, physical, and biological components of the environment as natural resources and the effects of pollution on their maintenance and utilization. Also offered as ENVI 201. *Instructor: Ward*

HEAL 208(S) CHEMICAL ALTERATIONS OF BEHAVIOR (3-0-3)

Investigation of the use, abuse, and misuse of alcohol, tobacco, and psychoactive drugs. *Instructor: Yost*

HEAL 212 CONSUMER HEALTH (3-0-3)

Study of factual information and guidelines that enable consumers to act intelligently in selecting health products and services, with emphasis on the economic aspects of health. *Instructor: Iammarino*

HEAL 304(S) FIRST AID/EMERGENCY CARE/CPR (1-1-1)

American Red Cross certification program for emergency care procedures for illness, traumatic injuries, and cardiopulmonary resuscitation. Limited enrollment (25). Also offered as HPER 304. *Instructor: Vandenberg*

HEAL 350 UNDERSTANDING CANCER (3-0-3)

Examination of cancer from a biological, psychological, and sociological perspective, with emphasis on cancer epidemiology, prevention, and early detection. *Instructor: Iammarino*

HEAL 379 HEALTH SCIENCES INTERNSHIP (hours variable)

Internship for upper-level students in health sciences track. Prerequisite: permission of instructor. *Instructor: Iammarino*

HEAL 407(F) EPIDEMIOLOGY (3-0-3)

Study of communicable, noncommunicable, and behavioral diseases, with emphasis on the disease process and basic epidemiologic methods. *Instructor: Iammarino*

HEAL 410(S) PROGRAM DEVELOPMENT IN HEALTH EDUCATION (3-0-3)

Survey of course content and methods in teaching health education. Includes program materials and curriculum construction in secondary school health education programs. Required for teaching certification in health. *Instructor: Iammarino*

HEAL 495(F) INDEPENDENT STUDIES (HOURS VARIABLE)

HEAL 496(S)

Instructor: Iammarino

HEAL 498(F) TOPICS IN HEALTH EDUCATION (hours variable)

Instructor: Iammarino

Hebrew (HEBR)

The School of Humanities/Department of Linguistics

HEBR 101(F) BEGINNING MODERN HEBREW (3-0-3)

No prior knowledge of Hebrew is assumed. The course covers elementary reading, writing, and conversation. A major portion of instruction is in Hebrew. Supplementary reading from elementary modern texts.

HEBR 102(S) CONTINUING MODERN HEBREW (3-0-3)

A continuation of HEBR 101. Vocabulary, grammar, and conversational skills develop through daily student participation in Hebrew language dialogues and presentations. Students will attain fluency in reading unpointed texts.

HEBR 351(F) ELEMENTARY BIBLICAL HEBREW (3-0-3)

Study of the grammar and vocabulary needed for reading simple prose texts. Includes approaches to grammar through historical linguistics and comparisons of Hebrew with other northwest Semitic languages. No prior knowledge of Hebrew needed. Also offered as RELI 351. Not offered 1997-98.

HEBR 352(S) INTERMEDIATE BIBLICAL HEBREW (3-0-3)

Continuation of HEBR 351. Includes the development of vocabulary and grammatical skills through reading biblical prose and poetic texts. Also offered as RELI 352. Not offered 1996-97. Prerequisite: HEBR 351.

HEBR 411(F) INTRODUCTION TO CLASSICAL HEBREW I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Introduction to Hebrew (two semesters) with emphasis on biblical Hebrew (basic grammar and vocabulary), with occasional exercises in modern Hebrew (reading, speaking, and writing skills). Also offered as RELI 411. *Instructor: Henze*

HEBR 412(S) INTRODUCTION TO CLASSICAL HEBREW II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of HEBR 411. Also offered as RELI 412. *Instructor: Henze*

Hindi (HIND)

The School of Humanities/Department of Linguistics

HIND 101(F) ELEMENTARY HINDI I (3-1-4)

Instructor: Prakash

HIND 102(S) ELEMENTARY HINDI II (3-1-4)

Instructor: Prakash

HIND 201(F) INTERMEDIATE HINDI (3-0-3 each semester)

HIND 202(S)

Development of intermediate language skills. Includes writing, reading, and conversation in Hindi. *Instructor: Prakash*

HIND 301(F) ADVANCED READING AND

HIND 302(S) COMPREHENSION (3-0-3 each semester)

Discussion of materials from anthologies on culture, religion, and history, as well as discussion of current affairs from newspapers. All readings and discussions in Hindi. *Instructor: Prakash*

History (HIST)

The School of Humanities

HIST 101(F) EUROPE'S FIVE HUNDRED YEARS, 1450-1815 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Comprehensive exploration of how the world was thoroughly reshaped by the European experience. Recommended for freshmen and sophomores. See also HIST 301. *Instructor: Stokes*

HIST 102(S) EUROPE'S FIVE HUNDRED YEARS, 1815-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Continuation of HIST 101. May take either course separately. Recommended for freshmen and sophomores. See also HIST 302. *Instructor: Caldwell*

HIST 105(F) VARIETIES OF THE AMERICAN EXPERIENCE I (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of interpretive approaches to American history. Not offered 1997-98.

HIST 106(S) VARIETIES OF THE AMERICAN EXPERIENCE II (3-0-3)

Continuation of HIST 105. Not offered 1997-98.

HIST 117(F) THE UNITED STATES, 1815-1877 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of American social, political, and economic history from the early republic through the Civil War and Reconstruction, with emphasis on industrialization and the history of labor, women's history, and race relations. See also HIST 317. *Instructor: Dailey*

HIST 118(S) THE UNITED STATES, 1877-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Continuation of HIST 117. Includes American history from Reconstruction to the present. May take HIST 117 and 118 separately. See also HIST 318. *Instructor: Dailey*

HIST 151(S) FRESHMAN SEMINAR: RECORDING THE PAST IN HISTORY AND FILM (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of how historical texts and moving images offer different approaches to understanding the past. Includes the relationships of evidence, narrative method, and authorial intent in both media, as well as a discussion of films (e.g., *Spartacus*, *On the Waterfront*, *Schindler's List*, *The Return of Martin Guerre*, and *Rosie the Riveter*) and ancient and modern historical works. Limited enrollment (must see instructor no later than first class meeting). Not offered 1997-98. *Instructor: Maas*

HIST 152(S) FRESHMAN SEMINAR IN ANCIENT HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

The Hero and his Companion from Gilgamesh to Sam Spade. How does presentation of heroic action illustrate the basic values of a society? Through consideration as historical sources of several ancient texts, modern mystery stories, and two "western" movies, we will see the development of a style of community service that links heroism with alienation. The extent to which women participate will be traced. Limited enrollment. *Instructor: Maas*

HIST 154(S) FRESHMAN SEMINAR: LIFE OF MUHAMMAD (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the life of the Prophet Muhammad in the context of Islamic history and the growth of Islamic tradition, as well as in the context of Western views of Muhammad and Islam. Includes classical and modern Arabic biographies of Muhammad, Western polemical treatises on Muhammad, and the responses to them from the Islamic world. All Arabic works in English translation. Limited enrollment (15). Not offered 1997-98. *Instructor: Sanders*

HIST 160(S) FRESHMAN SEMINAR: JEFFERSON AND THE ORIGINS OF THE AMERICAN REPUBLIC (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the most talented of the U.S. Founding Fathers and how he helped define the country's revolutionary ideals, diplomacy, and politics, as well as its public lands, domestic architecture, religion, practice of slavery, and education. Includes readings, discussions, and essays. Limited enrollment (18). Not offered 1997-98. *Instructor: Gruber*

HIST 200(F) ORIGINS OF WESTERN CIVILIZATIONS: ATHENS, ROME, AND JERUSALEM (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Interdisciplinary introduction to the three great cultural traditions of ancient Judaism, Greece, and Rome. Primary sources and modern evaluations of their contributions are the focus of lectures and discussions. *Instructor: Maas*

HIST 202(F) INTRODUCTION TO MEDIEVAL CIVILIZATION: THE EARLY MIDDLE AGES (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Introduction to European culture of the "Dark Ages," from the fall of Rome to the end of the Viking invasions. Includes the use of historical, literary, artistic, and archaeological sources to trace changes in European material, spiritual, and cultural life between 300 and 1000 A.D. See also HIST 325. Not offered 1997-98. *Instructor: Nirenberg*

HIST 203(F) INTRODUCTION TO MEDIEVAL CIVILIZATION: THE HIGH MIDDLE AGES (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Continuation of HIST 202 (not a prerequisite). Includes European culture from the year 1000 to the discovery of the Americas, which encompasses the Crusades, the "discovery of the individual," chivalry and chivalric literature, the Black Death, and the beginnings of the Age of Exploration, using pictorial and architectural as well as literary and historical sources. See also HIST 326. *Instructor: Nirenberg*

HIST 205(F) MYTH, HISTORY, AND THE PROBLEM OF THE PAST (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of myth and history as two ways of interpreting the past that today evoke different responses: belief in history and pleasure in myth. Includes use of written texts and visual arts from classical antiquity and contemporary America, as well as cinema, to compare interpretive strategies. Limited enrollment. Also offered as HUMA 105. Not offered 1997-98. *Instructors: Maas, Mackie*

HIST 206(F) INTRODUCTION TO ASIAN CIVILIZATIONS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Introduction to the great cultural traditions of Asia, past and present, with emphasis on evolving religious and philosophical traditions, artistic and literary achievements, and patterns of political, social, and economic change. Also offered as HUMA 211, ASIA 211, and REL1211. New students take HUMA 111. Enrollment limited (40). *Instructors: Klein, Qian, Smith*

HIST 207(F) GREEK CIVILIZATION: AN INTRODUCTION (3-0-3)

DISTRIBUTION COURSE: GROUP I

Overview of the literary, artistic, and intellectual monuments of classical Greek civilization from Homer and the Bronze Age through the golden age of classical Athens to the spread of Greek culture in the Hellenistic world. Includes historical background and readings in primary sources. Two lectures and one discussion a week. Also offered as CLAS 207 and HUMA 207. *Instructor: Yunis*

HIST 211(S) AMERICAN THOUGHT AND SOCIETY I (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of 17th- and 18th-century American history, with emphasis on intellectual and social developments underlying the surface of events. See also HIST 311. Not offered 1997-98. *Instructor: Haskell*

HIST 212(F) AMERICAN THOUGHT AND SOCIETY II (3-0-3)

DISTRIBUTION COURSE: GROUP II

Continuation of HIST 212. Includes 19th- and 20th-century American history. May take HIST 211 and 212 separately. See also HIST 312. Not offered 1997-98. *Instructor: Haskell*

HIST 215(F) BLACKS IN THE AMERICAS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of the history of blacks in the New World from 1619 to the present. See also HIST 315. *Instructor: Cox*

HIST 219(F) PATTERNS OF THE CHINESE PAST (3-0-3)

DISTRIBUTION COURSE: GROUP II

This course will examine certain broad patterns of historical change in China from the Shang dynasty (c. 1800 B.C. to 1100 B.C.) to the 20th century. An emphasis will be placed not only on major political, social, economic, intellectual, and cultural transformations but also on a number of important individuals whose lives seem in some way to exemplify these changes or to reflect the debates and conflicts surrounding them. *Instructor: Smith*

HIST 220(S) CONTEMPORARY CHINA (3-0-3)

DISTRIBUTION COURSE: GROUP II

An examination of how global forces are transforming contemporary Chinese culture, with special attention to popular culture, media, and the debates over Chinese identity.

HIST 230(F) RETHINKING WESTERN TRADITION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Critical introduction to modern European intellectual history from the 18th century to the present, viewed in light of Nietzsche's provocative assessment of "European nihilism." Includes major intellectual movements (e.g., the Enlightenment and romanticism) and their influence on developments in philosophy, literature, the arts, and political theory, with emphasis on how the movements emerged from, and responded to, the historical circumstances of the day. Also offered as HUMA 230. Not offered 1997-98. *Instructor: Wolin*

HIST 231(F) AFRICA TO 1884 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Survey of the changing historiography of Africa. Includes the emergence of the Bantu, early Christianity and Islam, trans-Saharan trade, the medieval Sudanic empires, statelessness and state formation, Portugal in Africa, the slave trade, South Africa to 1867, the Mfecane, the Sudanic jihads, long-distance trade, and African-European relations in the 19th century. *Instructor: Odhiambo*

HIST 232(S) THE MAKING OF MODERN AFRICA (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Survey of the transformation of Africa from the late 19th century to the present. Includes Europe and Africa in the 19th century (e.g., the partition of Africa and the colonial state), economic change in the 20th century (e.g., plantation and peasant agriculture, mining and industrialization, wage and migrant labor, African capitalism, rural differentiation, and roots of hunger and poverty), social change in the 20th century (e.g., ethnic identity, emergence of elites, and changes in cultural policies regarding language, leisure, roles of women, religion, law and order, medicine and healing, and urbanization), political developments (e.g., ethnic unions, political parties, and decolonization), and Africa since independence. *Instructor: Odhiambo*

HIST 241(S) A HISTORY OF WOMEN IN AMERICA (3-0-3)**DISTRIBUTION COURSE: GROUP II**

A study of the social, economic, and political history of American women from pre-colonial times to the present. Also offered as WGST 234. *Instructor: Turner*

HIST 242(F) SOUTHERNERS: HISTORY AS BIOGRAPHY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

This course offers a biographical approach to southern history from the Civil War to Civil Rights. *Instructor: Turner*

HIST 244(S) INTRODUCTION TO WOMEN'S HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of the idea of women's history (is it the same as the history of women?) by examining the approaches and types of evidence that are used by scholars in the field. Includes the relationship of women's history to related fields such as feminist theory, gender studies, and the history of sexuality. See also HIST 344. Also offered as WGST 214. Not offered 1997-98. *Instructor: Quillen*

HIST 250(S) TRADITIONAL CHINESE CULTURE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Introduction to the language, philosophy, religion, art, literature, and social customs of China. See also HIST 450. *Instructor: Smith*

HIST 256(F) EUROPEAN POLITICS AND SOCIETY, 1890-1945 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of European history in the age of total war. Includes imperialism and the development of the welfare state, institutional responses to the demands of total warfare, the crisis of liberal constitutionalism, the Russian Revolution, and the rise of fascism. See also HIST 356. Not offered 1997-98. *Instructor: Caldwell*

HIST 257(S) PERCEPTIONS OF JEWS AND JUDAISM FROM TACITUS TO TOYNBEE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Comparison of Jewish self-images with perceptions of Jews and Judaism held by the dominant cultures in the West from antiquity through the modern period. Includes Tacitus, Paul, Eusebius, Chrysostom, Halevi, Luther, Modena, Grimmelshausen, da Costa, Spinoza, Glueck of Hamelin, Solomon Maimon, Marx, Freud, Hitler, Kook, Grade, and Toynbee. Also offered as RELI 257. Not offered 1997-98. *Instructor: Fishman*

HIST 260(S) WOMEN AND GENDER IN MODERN ENGLAND (3-0-3)**DISTRIBUTION COURSE: GROUP II**

From the reign of Elizabeth I to the reign of Elizabeth II, this course explores the history of women and gender in England. Looking especially at critical moments in politics, economics, medicine, and literary expression, this course investigates the changes in women's experience from an era of privileged aristocracy and preindustrial labor to the varied employment and mass politics of the 20th century. In the Early Modern and the Modern periods, gender boundaries and changing gender definitions shaped the experiences of women as leaders, writers, workers, and members of English society. This course explores these issues in lectures, discussions, and analyses of primary sources. Also offered as WGST 215. *Instructor: Whitlock*

HIST 261(F) HISTORY OF ENGLAND, FROM THE REFORMATION TO THE DEFEAT OF NAPOLEON (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the personalities and forces that changed England from a backwater of Europe into the leading nation in the world. See also HIST 361. Not offered 1997-98. *Instructor: Wiener*

HIST 262(S) HISTORY OF BRITAIN, 1815-PRESENT (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of Britain's takeoff into the industrial revolution, its adaptation to the flourishing of the empire, and its 20th-century geopolitical and economic decline. Includes the use of novels, biographies, and other materials to examine these transformations. See also HIST 362. Not offered 1997-98. *Instructor: Wiener*

HIST 269(S) U.S.-LATIN AMERICAN RELATIONS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Survey of the history of U.S.-Latin American relations from 1775 to the present, with emphasis on 20th-century policies and problems rising from interventions since 1945. See also HIST 469. Not offered 1997-98. *Instructor: Seed*

HIST 273(F) POSTBIBLICAL JEWISH HISTORY I (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the social, political, economic, and theological contexts that shaped Jewish life under the rule of the Romans, Christians, and Muslims. Includes developments in Jewish culture during this period in rabbinics, liturgy, poetry, philosophy, and mysticism. All primary source readings in English translation. See also HIST 373. Not offered 1997-98. *Instructor: Fishman*

HIST 274(S) POSTBIBLICAL JEWISH HISTORY II (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Includes the evolution and revolution in Jewish life as impacted by the Reformation, the Sabbatean messianic movement, Hasidism, the Enlightenment, emancipation, and nationalism in the context of Reform, positive-historical (i.e., Conservative), Neo-Orthodox, and Zionist redefinitions of Jewish identity. All primary source readings in English translation. See also HIST 374. Not offered 1997-98. *Instructor: Fishman*

HIST 277(F) AN INTRODUCTION TO THE 19TH-CENTURY MIDDLE EAST, 1798-1914 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

This course surveys the political, social, economic, and cultural history of the Middle East in the 19th century, with an emphasis on the Ottoman Empire and its peripheries in Syria and Egypt. *Instructor: Makdisi*

HIST 278(S) THE ARAB WORLD IN THE 20TH CENTURY, 1914-PRESENT (3-0-3)**DISTRIBUTION COURSE: GROUP II**

This course surveys the history and culture of the Arab world as it has developed from World War I to the present. Themes covered are nationalism, colonialism, and orientalism as they have been understood and discussed in the contemporary Arab world through debates about the question of Palestine, the status of women, and the rise of modern Islamic politics. *Instructor: Makdisi*

HIST 281(S) HISTORY OF THE ISLAMIC NEAR EAST, 600-1258 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Survey of the political, institutional, and social history of the Near East, from the rise of Islam to the Seljuks. Includes the elaboration of political and religious institutions (especially the caliphate), the origins and rise of Shi'i Islam, the growth and subsequent fragmentation of the caliphal empires, and the advent of the Turkic peoples. See also HIST 381. Not offered 1997-98. *Instructor: Sanders*

HIST 282(F) HISTORY OF THE ISLAMIC NEAR EAST, 1258-1805 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Includes history from the advent of the Seljuk Turks to the Ottoman conquest of Egypt, which encompasses the fate of the caliphate after the political fragmentation of the Abbasid empire, the rise of the mamluk military system, Mongols, the Crusades, and the early history of the Ottoman and Safavid empires. HIST 281 recommended but not required. See also HIST 382. *Instructor: Sanders*

HIST 284(S) THE CRUSADES: HOLY WAR IN MEDIEVAL CHRISTENDOM AND ISLAM (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the Crusades (11th to 15th centuries) from the point of view of both Christian Europe and the Islamic Near East. Includes the political and military history of the Crusades, as well as the social, cultural, and religious transformations that caused, and were wrought by, these conflicts. See also HIST 384. Not offered 1997-98. *Instructors: Nirenberg, Sanders*

HIST 286(S) THE REFORMATION AND ITS RESULTS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of theology and church-state issues from the 16th-century Reformation to the 17th century. Includes the Reformation's medieval background, Luther and Calvin, the Catholic Reformation, religious wars, Protestant orthodoxy, Pietist spirituality, Puritanism, and calls for toleration. Also offered as RELI 286. Not offered 1997-98. *Instructor: Stroup*

HIST 292(S) THE HOLOCAUST IN HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of recent attempts to view the Holocaust historically, as irreducibly unique or as one of other genocides (e.g., in Armenia, the Soviet Union, and Cambodia), and the question of whether such comparisons place the alleged uniqueness of the Holocaust in jeopardy. Includes introductory treatment of historical circumstances surrounding the Holocaust and a review of the often contentious historical debates. Not offered 1997-98. *Instructor: Wolin*

HIST 293(F) THE ART OF WAR FROM MACHIAVELLI TO NAPOLEON (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of the theory and practice of warfare from the 15th century to the early 19th century. Includes Machiavelli, Saxe, and Napoleon. See also HIST 393. Not offered 1997-98. *Instructor: Gruber*

HIST 294(S) WAR IN THE MODERN WORLD (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of the theory, practice, and experience of war in the 19th and 20th centuries. Includes Clausewitz, Remarque, and Fuchida. See also HIST 394. Not offered 1997-98. *Instructor: Gruber*

HIST 295(F) THE AMERICAN SOUTH (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Survey of the history of the American South from the development of Native American cultures to the present. Includes social, cultural, and intellectual history, with emphasis on slavery and the plantation economy, the rise of southern distinctiveness, the Civil War and Reconstruction, sharecropping, political reform, the civil rights movement, the rise of the Sunbelt, southern religion, music, and literature, and the future of southern regionalism. See also HIST 395. Not offered 1997-98. *Instructor: Boles*

HIST 297(F) AMERICAN LEGAL HISTORY I (3-0-3)

DISTRIBUTION COURSE: GROUP II

An introduction to the development of American law and legal institutions from the colonial period to the Civil War. This course examines legal change in relation to broader transformations in economy, society, and political culture. Main themes include the legality of revolution, liberalism and republicanism in legal culture, law as governance, the rise of contract in an emerging market economy, shifting legal definitions of personal status (master/slave, employer/worker, husband/wife, parent/child), and the Civil War as a constitutional crisis. Readings include cases, statutes, and treatises, as well as major monographic interpretations. *Instructor: Willrich*

HIST 298(S) AMERICAN LEGAL HISTORY II (3-0-3)

DISTRIBUTION COURSE: GROUP II

An introduction to the development of American law from Reconstruction to the present. This course examines the ways in which law shaped and was shaped by major transformations in economy, society, and political culture: emancipation, industrialization, progressive reform, the New Deal, race- and gender-based movements for civil rights, and the "crisis" of postmodernism. Major themes include the legal response to industrialization, the emergence of new conceptions of individual rights, and the legal underpinnings of the modern liberal state. Readings include legal materials (cases, statutes, treatises), as well as major monographic interpretations. History 297/397 is not a prerequisite. *Instructor: Willrich*

HIST 299(S) CIVIL WAR AND RECONSTRUCTION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of the causes, events, and results of America's most severe conflict, with emphasis on connections between federalism, racial democracy, and military-political events. See also HIST 399. Not offered 1997-98.

HIST 300 INDEPENDENT STUDY (hours variable)

Independent study under the supervision of a history faculty member. Prerequisite: permission of instructor.

HIST 301(F) EUROPE'S FIVE HUNDRED YEARS, 1450-1815 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 101. May not receive credit for both HIST 101 and 301. Recommended for juniors and seniors. *Instructor: Stokes*

HIST 302(S) EUROPE'S FIVE HUNDRED YEARS, 1815-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 102. May not receive credit for both HIST 102 and 302. Recommended for juniors and seniors. *Instructor: Caldwell*

HIST 303 UNDERGRADUATE INDEPENDENT READING (3-0-3)**HIST 304(S)**

Independent reading under the supervision of a faculty member. Open to a limited number of advanced students with special permission.

HIST 305(F) RUSSIAN HISTORY

DISTRIBUTION COURSE: GROUP II

Survey of Russian history from earliest times to present. Not offered 1997-98. *Instructor: Stokes*

HIST 306(F) POLITICS AND SOCIETY IN ANCIENT GREECE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Discussion of the main developments in the social, political, and intellectual life of the Greek world from the end of the Mycenaean age to the advent of Alexander the Great. Not offered 1997-98. *Instructor: Maas*

HIST 307(F) IMPERIAL ROME, FROM CAESAR TO DIOCLETIAN (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of how Rome acquired, maintained, and understood her empire. Includes the development of a political, social, and ideological system reaching from Scotland to Mesopotamia during the three centuries of Rome's greatest power. Not offered 1997-98. *Instructor: Maas*

HIST 308(S) THE WORLD OF LATE ANTIQUITY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the social, religious, and political history of the Roman world from Diocletian to the rise of Islam, with emphasis on the breaking of the unity of the Mediterranean world and the formation of Byzantine society in the Greek East. *Instructor: Maas*

HIST 309(F) DECLINE AND FALL OF THE ROMAN EMPIRE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of the circumstances surrounding the end of Roman political authority in Western Europe. Includes ancient and modern theories, with emphasis on the importance of the Germanic invasions. Not offered 1997-98. *Instructor: Maas*

HIST 311(S) AMERICAN THOUGHT AND SOCIETY I (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 211. May not receive credit for both HIST 211 and 311. Not offered 1997-98. *Instructor: Haskell*

HIST 312(F) AMERICAN THOUGHT AND SOCIETY II (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 212. May not receive credit for both HIST 212 and 312. Not offered 1997-98. *Instructor: Haskell*

HIST 313(F) THE MEXICAN REVOLUTION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Mexico is run today by politicians who see themselves as the heirs to the 1910-1917 revolution. Yet their authoritarian government rules Mexico in nearly the same way as did the dictatorships they ousted. This lecture and discussion course will examine the roots of the Mexican Revolution, the development of the coalitions of peasants, workers, and middle-class politicians that participated in the conflict and the slow institutionalization that followed. *Instructor: Wolfe*

HIST 315(F) BLACKS IN THE AMERICAS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 215. May not receive credit for both HIST 215 and 315. *Instructor: Cox*

HIST 316(F) MEXICAN AMERICAN HISTORY, 20TH CENTURY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of the development of people of Mexican descent within 20th-century U.S. history. Includes social relations, transborder relations, community formation and development, immigration, labor, political organization, ideology, and identity, with emphasis on time- and place-specific variations in the social incorporation of the Mexican community as a national minority and a bottom segment of the working class. Limited enrollment (30). Preference given to graduating seniors. Prerequisite: permission of department chair. Not offered 1997-98.

HIST 317(F) THE UNITED STATES, 1815-1877 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 117. May not receive credit for both HIST 117 and 317. *Instructor: Dailey*

HIST 318(S) THE UNITED STATES, 1877-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 118. May not receive credit for both HIST 118 and 318. *Instructor: Dailey*

HIST 319(S) THE CITY, TECHNOLOGY, AND THE ENVIRONMENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the political, environmental, and social impacts of technology on urban growth in the U.S. during the 19th and 20th centuries, with emphasis on the city-building process, urban technology, public works and city services, and environmental conditions. Not offered 1997-98.

HIST 320(F) SCIENCE IN ANTIQUITY AND THE MIDDLE AGES (3-0-3)

Survey of science from ancient Mesopotamia, Egypt, and Greece to the end of the Middle Ages. No expertise in science required. Not offered 1997-98. *Instructor: Van Helden*

HIST 321(S) SCIENCE IN EARLY MODERN EUROPE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the radical transformation in content, method, and institutional setting of Greek science (which was assimilated during the High Middle Ages) between 1400 and 1700. Includes Copernicus, Kepler, Galileo, Descartes, Newton, and others, viewed within the general cultural history of this period. *Instructor: Van Helden*

HIST 322(S) PHYSICAL SCIENCE FROM NEWTON TO EINSTEIN (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the physical sciences from the establishment of the Newtonian world view (c. 1700) to its breakdown in the 20th century. Not offered 1997-98. *Instructor: Van Helden*

HIST 324(S) WOMEN IN GREECE AND ROME (3-0-3)

Survey of the depiction of women in Greek and Roman mythology, literature, and art. Includes study of the lives of Greek and Roman women as evidenced by archaeological as well as literary materials. Also offered as CLAS 322 and WGST 342. *Instructor: Wallace*

HIST 325(S) INTRODUCTION TO MEDIEVAL CIVILIZATION: THE EARLY MIDDLE AGES (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 202. May not receive credit for both HIST 202 and 325. Not offered 1997-98. *Instructor: Nirenberg*

HIST 326(F) INTRODUCTION TO MEDIEVAL CIVILIZATION: THE HIGH MIDDLE AGES (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 203. May not receive credit for both HIST 203 and 326. *Instructor: Nirenberg*

HIST 327(S) SPANISH AND PORTUGUESE OVERSEAS EXPANSION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Focuses on the pioneering Spanish and Portuguese roles and European expansion. Not offered 1997-98. *Instructor: Seed*

HIST 328(S) MODERN LATIN AMERICA: FROM INDEPENDENCE TO THE PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Discussions of Latin America usually fall back upon facile generalizations that emphasize recent changes to explain "current events." This lecture course will examine in detail the creation of modern Latin America. We will concentrate on the struggles over land and labor, the creation of nation-states, and the conflicts within those states over issues of citizenship and social justice. The course will also address the contentious role the United States has played in the region. *Instructor: Wolfe*

HIST 329(S) FIRST EUROPEAN EXPANSION, 1492-1640 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of early European expansion in the 16th century and the establishment of overseas colonial empires by France, Spain, Portugal, England, and the Netherlands, with emphasis on the rationales for empire-building created by concepts of “voluntary” subjection (through commercial treaties and conversion) and of involuntary submission (through conquest during a “just war”). *Instructor: Seed*

HIST 330(S) U.S. ENVIRONMENTAL HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of human interaction with the American environment from colonial times to the present. Includes colonization, westward expansion, industrialization, conservation, and environmentalism in light of five centuries of both reckless exploitation and efforts to restore harmony between humans and the natural world. Not offered 1997-98.

HIST 331(S) LABOR IN AMERICA, 1620-PRESENT (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of workers’ responses to economic and social changes from colonial times to the present. Includes slavery, industrialism, domestic labor, the question of American exceptionalism, the “great upheaval” of the late 19th century, the New Deal, the decline of industrialism, and the future of labor, as well as the meaning of class as a concept and identity, its relationship to race and gender, and how these ideas are shaped by working class activism. Not offered 1997-98. *Instructor: Shelton*

HIST 332(F) HISTORICAL THEMES IN AMERICAN CULTURE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of historical themes in popular culture through film, video, readings, speakers, museum exhibitions, and exhibition catalogues. Includes various popular forms that historical information may assume and the quality of their historical content, as well as the underlying assumptions inherent in popular historical presentations and a critical evaluation of the history portrayed. Limited enrollment. *Instructor: Bixel*

HIST 333(F) GALILEO IN CONTEXT (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the life and work of one of the founders of modern science in the context of European science at the turn of the 17th century and the culture of the absolutist courts in Italy. Includes experimentation, the role of mathematics in science, Galileo’s celestial discoveries with the telescope, and his trial, with emphasis on his writings. Taught through the Virtual Notebook System in the Electronic Studio. No prior expertise in science or computers required. Limited enrollment (30). Not offered 1997-98. *Instructor: Van Helden*

HIST 334(S) HISTORY OF ASTRONOMY AND COSMOLOGY (3-0-3)

Lecture and discussion on the history of astronomy and cosmology from antiquity to the 20th century. *Instructor: Van Helden*

HIST 335(S) CARIBBEAN HISTORY, TO 1838 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of Caribbean history from the arrival of the Europeans to the abolition of slavery in the British West Indies in 1838, with emphasis on the social and economic history of the region. Includes the question of why slavery and the plantation system both emerged and fell. *Instructor: Cox*

HIST 336(S) CARIBBEAN HISTORY, 1838-PRESENT (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of the social, economic, and political history of the Caribbean people from the abolition of slavery to the emergence of independent nations in the modern era. Not offered 1997-98. *Instructor: Cox*

HIST 337(F) HISTORY OF ANCIENT AND MEDIEVAL LAW (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the history of ancient law, with emphasis on imperial Roman law and various forms of medieval law (e.g., vulgar Roman law, barbaric Germanic law, and English common law). Not offered 1997-98.

HIST 338(S) HUMANIST TRADITION AND ITS CRITICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of aspects of Western humanist and antihumanist traditions from the early modern period to the present, with emphasis on how writers within each tradition understood fundamental terms like human nature, self, community, morality, and freedom. Includes literary, theological, and philosophical texts, as well as contemporary critical theory. Must see the instructor before preregistration. Not offered 1997-98. *Instructor: Quillen*

HIST 339(S) MORALITY AND HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the idea of morality as having a history and therefore being susceptible to change. Includes selected readings, drawn mainly from Anglo-American history and philosophy, that range over a period of several centuries. Not offered 1997-98. *Instructor: Haskell*

HIST 340(F) VICTORIAN INTELLECTUALS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the upheaval in late 19th-century social thought and culture caused in part by Darwin's theory of evolution, with emphasis on American readings, using English and continental writers for comparison. May include Spencer, Veblen, Henry Adams, William James, Dewey, Matthew Arnold, and Nietzsche. Not offered 1997-98. *Instructor: Haskell*

HIST 341(F) HISTORY OF CHINA I (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of Chinese history from antiquity to c. 1800, highlighting salient aspects of China's heritage. Not offered 1997-98. *Instructor: Smith*

HIST 342(S) HISTORY OF CHINA II (3-0-3)

DISTRIBUTION COURSE: GROUP II

Continuation of HIST 342. Includes China's revolutionary transformation in the 19th and 20th centuries, from the Ch'ing dynasty to the People's Republic. May take HIST 341 and 342 separately. Not offered 1997-98. *Instructor: Smith*

HIST 344(S) INTRODUCTION TO WOMEN'S HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 244. May not receive credit for both HIST 244 and 344. Also offered as WGST 314. Not offered 1997-98. *Instructor: Quillen*

HIST 345(F) RENAISSANCE EUROPE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of major cultural developments in Western Europe from the rise of Italian humanism in the 14th century to European conquest and expansion in the 16th century. Not offered 1997-98. *Instructor: Quillen*

HIST 346(S) REFORMATION EUROPE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of Western Europe in the 16th century, with emphasis on the interplay between politics and religion in the rise and consolidation of Protestantism and the Catholic revival. Not offered 1997-98. *Instructor: Quillen*

HIST 347(F) SLAVERY AND ABOLITION IN ANTEBELLUM AMERICA (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of slavery, the central moral, social, and political problem of antebellum America. Includes the cultural and intellectual setting for the abolitionist crisis and how the debate over slavery was influenced by region, race, class, and gender. Not offered 1997-98.

HIST 349(F) WOMEN AND GENDER IN 19TH-CENTURY EUROPE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of the political and cultural discussions concerning the so-called "Woman Question" in 19th-century Europe. Includes the role of public and private legal rights in republicanism and the early feminist movement, the reformulation of notions of gender equality in the context of 19th-century socialist movements, and the challenges to gender identity posed by cultural modernism at the end of the century. Not offered 1997-98. *Instructor: Caldwell*

HIST 350(F) AMERICA, 1900-1940 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of major economic, social, and political developments in the U.S. from 1900 to 1940. *Instructor: Matusow*

HIST 351(S) AMERICA SINCE 1945 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of major economic, social, and political developments in the United States since 1945. *Instructor: Matusow*

HIST 352(F) COMPARATIVE MODERNIZATION OF CHINA AND JAPAN (3-0-3)

DISTRIBUTION COURSE: GROUP II

Comparison of the historical development of China and Japan in the 19th and early 20th centuries, with emphasis not only on domestic issues and Sino-Japanese relations but also on the larger international environment. Not offered 1997-98. *Instructor: Smith*

HIST 353(S) THE COLD WAR, 1945-1963 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of America's role in world affairs since 1945. Includes the origins of the struggle between the free and communist worlds, the influence of nuclear weapons on superpower relations, the interaction of foreign policy and American domestic politics, the contest for influence in the developing world, and factors responsible for the cold war's apparent demise. Limited enrollment (20). Prerequisite: permission of instructor. Not offered 1997-98.

HIST 354(F) GERMAN HISTORY, 1648-1890 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of the "Germanies" from the rise of the absolutist state following the Thirty Years' War to the unification of Germany in 1871. Includes the development of the bureaucratic and military institutions of the modern state, changing conceptions of state and society, and the major social and economic changes of the period. *Instructor: Caldwell*

HIST 355(S) MODERN GERMANY, 1890-1990 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of German history from the crisis of the monarchical regime before World War I to the unification of East and West Germany in 1989-90, with emphasis on political attempts to come to terms with challenges posed by organized capitalism, by the political demands of the working classes, and by advanced technology. Includes the dictatorship of World War I, Weimar democracy and the welfare state, the National Socialist revolution, and the West German model of a welfare state under law vs. the East German model of "real, existing socialism." Not offered 1997-98. *Instructor: Caldwell*

HIST 356(F) EUROPEAN POLITICS AND SOCIETY, 1890-1945 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 256. May not receive credit for both HIST 256 and 356. Not offered 1997-98. *Instructor: Caldwell*

HIST 357(S) PERCEPTIONS OF JEWS AND JUDAISM FROM TACITUS TO TOYNBEE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 257. May not receive credit for both HIST 257 and 357. Also offered as RELI 303. Not offered 1997-98. *Instructor: Fishman*

HIST 358(S) CULTURAL RESPONSES TO THE FRENCH REVOLUTION IN ENGLAND AND GERMANY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the role of the French Revolution in the rise of European romanticism and German classicism, with emphasis on the German and English traditions. Includes writers from Goethe to Heine and Blake to Carlyle, as well as music and art of the period. Taught in English. All readings in either English or German. Not offered 1997-98. *Instructors: Bledsoe, Zammuto*

HIST 359(F) ROMAN BRITAIN AND MEDIEVAL ENGLAND (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of historical developments in Roman Britain and medieval England, with emphasis on social, economic, and religious factors. Not offered 1997-98.

HIST 360(S) SOCIETY AND THE SEXES IN MODERN FRANCE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of gender roles, gender ideology, and sexual practices in the construction of French society and culture from the Enlightenment to World War II. Includes sexual politics and the emergent "public sphere" in the 18th century, masculine and feminine images of the state during the French Revolution, feminist discourses and politics in 1789, 1848, and during the campaign for women's suffrage, and family structures, patriarchy, and notions of property. Taught in English. Some readings may be in French. Also offered as FREN 360 and WGST 311. *Instructor: Sherman*

HIST 361(F) HISTORY OF ENGLAND, FROM THE REFORMATION TO THE DEFEAT OF NAPOLEON (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 261. May not receive credit for both HIST 261 and 361. Not offered 1997-98. *Instructor: Wiener*

HIST 362(S) HISTORY OF BRITAIN, 1815-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 262. May not receive credit for both HIST 262 and 362. Not offered 1997-98. *Instructor: Wiener*

HIST 363(S) GENDER AND SOCIETY IN EARLY MODERN EUROPE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the relationship between ideas about gender and the social, political, and legal institutions in Europe from c. 1350 to 1800. Includes the structure and role of the family, gender roles in religious institutions, and the regulation of sexuality. Also offered as WGST 338. Not offered 1997-98. *Instructor: Quillen*

HIST 364(F) THE RISE AND FALL OF THE BRITISH EMPIRE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of British imperialism in the 19th and 20th centuries. Includes the evolution of empire, pro- and anti-imperialist discourses, the strategic and diplomatic implications of empire, British society and the empire, and interactions between colonizer and colonized. Not offered 1997-98.

HIST 365(F) THE AMERICAN REVOLUTION, 1763-1789 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Investigation of the causes, processes, and consequences of the American Revolution, with emphasis on the reasons why colonial Americans rebelled, the character of the War for American Independence, and the constitutional settlement of 1787 with its securing of fundamental liberties. Not offered 1997-98.

HIST 366(S) HISTORY OF MODERN BRAZIL (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Latin America's largest and most economically powerful nation, Brazil boasts a history that is quite distinct from the histories of its Spanish American neighbors. This lecture and discussion course will examine Brazil's history from its peaceful independence declaration in 1822 to its present struggles to create a democratic society in the aftermath of a twenty-year military dictatorship. We will pay close attention to Brazil's legacy as the world's largest slave-holding society in the 19th century, its struggle to conquer its huge territory, and the interaction of those factors in shaping its national identity. *Instructor: Wolfe*

HIST 367(F) HISTORY OF SOUTH AFRICA (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Survey of the history of South Africa from the mid 17th century. Includes South Africa before the Europeans, white settlers and Cape colonial society to 1814, the capitalist revolution, the 19th-century struggle for South Africa, the transformation of South African society, the rise and development of the apartheid state, resistances and struggles leading to independence. Not offered 1997-98. *Instructor: Odhiambo*

HIST 368(S) IMPERIALISM AND NATIONALISM IN AFRICA (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the origins, processes, and critiques of imperialism and nationalism in Africa in the 20th century. Not offered 1997-98. *Instructor: Odhiambo*

HIST 370(F) EUROPEAN INTELLECTUAL HISTORY: BACON TO HEGEL (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Survey of major thinkers and intellectual movements from the scientific revolution to the French Revolution. Includes the use of primary and secondary sources to establish the main contours of philosophical, political, and cultural expression and to relate them to their historical context. Not offered 1997-98. *Instructor: Zammito*

HIST 371(F) OLD REGIME AND REVOLUTIONARY FRANCE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of transformations in French society, culture, and politics before, during, and after the French Revolution. Taught in English. Also offered as FREN 371. *Instructor: Sherman*

HIST 372(S) THE MAKING OF MODERN FRANCE, 1815-1995 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of the emergence of modern France. Includes the impacts of war, industrialization, imperialism, and cultural mastery. Taught in English. Also offered as FREN 372. Not offered 1997-98. *Instructor: Sherman*

HIST 373(F) POSTBIBLICAL JEWISH HISTORY I (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Enriched version of HIST 273. May not receive credit for both HIST 273 and 373. Not offered 1997-98. *Instructor: Fishman*

HIST 374(S) POSTBIBLICAL JEWISH HISTORY II (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Enriched version of HIST 274. May not receive credit for both HIST 274 and 374. Not offered 1997-98. *Instructor: Fishman*

HIST 375(S) EUROPEAN ROMANTICISM, 1750-1850 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Investigation of the emergence, triumph, and defeat of romanticism as a major cultural force in European history, with emphasis on national and epochal diversity within romanticism in Britain, Germany, and France. Includes Rousseau, Goethe, Schiller, Schlegel, Schelling, Wordsworth, Coleridge, Byron, Stendhal, Hugo, and Baudelaire, as well as music and art. *Instructor: Zammito*

HIST 376(F) EXISTENTIALISM (3-0-3)

Examination of the genesis and development of existentialism as an intellectual force in 19th- and 20th-century Europe. Includes a brief treatment of Kierkegaard and Nietzsche and a study of 20th-century figures such as Heidegger, Sartre, and Camus. Not offered 1997-98. *Instructor: Wolin*

HIST 377(F) THE ANCIENT CITY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Compares the historian's and social scientist's approaches to the emerging preindustrial city. Cities are the products of an interaction of physical and social environments and their histories may reflect their enormous symbolic weight. We use the comparative method to explore general principles of development lurking behind the different faces of ancient urbanism. Also offered as ANTH 377. *Instructors: Maas, R. McIntosh*

**HIST 380(S) INTELLECTUAL POLITICS IN POSTWAR FRANCE:
FROM SARTRE TO DERRIDA (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Examination of the rise and fall of three major intellectual paradigms in postwar France—existential humanism, poststructuralism, and neoliberalism—as they relate to broader themes of French political and cultural history. Not offered 1997-98. *Instructor: Wolin*

HIST 381(F) HISTORY OF THE ISLAMIC NEAR EAST, 600-1258 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 281. May not receive credit for both HIST 281 and 381. Not offered 1997-98. *Instructor: Sanders*

HIST 382(F) HISTORY OF THE ISLAMIC NEAR EAST, 1258-1805 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 282. May not receive credit for both HIST 282 and 382. *Instructor: Sanders*

**HIST 384(S) THE CRUSADES: HOLY WAR IN MEDIEVAL
CHRISTENDOM AND ISLAM (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 284. May not receive credit for both HIST 284 and 384. Not offered 1997-98. *Instructors: Nirenberg, Sanders*

HIST 385(F) CHRISTIANS AND JEWS IN THE ISLAMIC WORLD (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of Christian and Jewish communities in the Islamic world from the rise of Islam to the end of the Ottoman empire. Includes the legal status of *dhimmis* (protected peoples), social and economic life, communal organization, the interplay of Jewish and Muslim laws, and political authority in these communities, as well as discussion of their modern historiography, a comparative study of Jewish communities in Christendom and Islam, and discussion of Muslim communities living under Christian rule in the Middle Ages. Not offered 1997-98. *Instructor: Sanders*

HIST 386(F) INTRODUCTION TO ISLAM (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to Islam, with emphasis on the ways that Muslims have historically understood themselves and their own history. Includes the development of classical Islamic religious thought, forms of Quranic exegesis, the development of Shi'i doctrine, Islamic law and theology, mysticism, and religious practice in different parts of the Islamic world, as well as the imperialism in emergent modern Islamist movements. Not offered 1997-98. *Instructor: Sanders*

HIST 387(S) LIFE ON THE NILE: EGYPTIAN POLITICS, CULTURE, AND SOCIETY, MEDIEVAL TO MODERN TIMES (3-0-3)

Examination of Egyptian history from the Arab conquest in 641 to the 20th century, with emphasis on major themes in Egypt's political, social, and cultural life, on historical continuities and discontinuities, and on problems of historical interpretation. Not offered 1997-98. *Instructor: Sanders*

HIST 389(F) EASTERN EUROPE TO 1945 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the historical development of the countries of Eastern Europe in the central region (e.g., Poland, Czechoslovakia, and Hungary) and in the southeast (e.g., Romania, Bulgaria, Albania, and Yugoslavia) through the end of World War II. Not offered 1997-98. *Instructor: Stokes*

HIST 390(S) EASTERN EUROPE SINCE 1945 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Continuation of HIST 389. Includes the development of Eastern Europe since 1945, with emphasis on the causes and results of the revolutions of 1989. HIST 389 recommended but not required. Not offered 1997-98. *Instructor: Stokes*

HIST 392(S) FRENCH SOCIAL THOUGHT: FROM DURKHEIM TO DERRIDA (3-0-3)

DISTRIBUTION COURSE: GROUP II

Reevaluation of the predominant orientations of modern French thought, often viewed as inspired by a Cartesian rationalism from which 20th-century French thinkers have striven to free themselves. Includes leading French intellectuals from anthropology (e.g., Durkheim, Mauss, and Levi-Strauss), philosophy (e.g., Sartre, Foucault, and Derrida), and letters (e.g., the surrealists and Bataille). Not offered 1997-98. *Instructor: Wolin*

HIST 393(F) THE ART OF WAR FROM MACHIAVELLI TO NAPOLEON (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 293. May not receive credit for both HIST 293 and 393. Not offered 1997-98. *Instructor: Gruber*

HIST 394(S) WAR IN THE MODERN WORLD (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 294. May not receive credit for both HIST 294 and 394. Not offered 1997-98. *Instructor: Gruber*

HIST 395(F) THE AMERICAN SOUTH (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 295. May not receive credit for both HIST 295 and 395. Not offered 1997-98. *Instructor: Boles*

HIST 397(F) AMERICAN LEGAL HISTORY I (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 297. May not receive credit for both HIST 297 and 397. *Instructor: Willrich*

HIST 398(S) AMERICAN LEGAL HISTORY II (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 298. May not receive credit for both HIST 298 and 398. *Instructor: Willrich*

HIST 399(S) CIVIL WAR AND RECONSTRUCTION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 299. May not receive credit for both HIST 299 and 399. Not offered 1997-98.

HIST 403(F) HONORS THESIS (3-0-3)

Restricted to students who have been admitted to the honors program; consent of the director of the honors program is required. Students must take both HIST 403 and 404 to gain credit.

HIST 404(S) HONORS THESIS (3-0-3)

Continuation of HIST 403, which is prerequisite for enrollment. Completion of this course is required to obtain credit for HIST 403.

HIST 405(F) ISSUES IN COMPARATIVE HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the theory and practice of comparative history. Includes readings and discussions on methodology, then student oral presentations of select topics as a prelude to a final paper. Collaborative projects are possible and even encouraged. Not offered 1997-98. *Instructor: Smith*

HIST 409(F) HISTORY OF EAST AFRICA (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of East African cultures, societies, economies, and politics from earliest times to the present. Includes the peoples and languages of East Africa, migrations and settlement, state formation, long-distance trade and expansions in scale, imperialisms and colonial conquest, colonial transformations of African societies, nationalism, and independence. *Instructor: Odhiambo*

HIST 410(S) KENYA IN MODERN HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of Kenya's transformation from tribal societies to a modern state. Includes a survey of migrations and settlement, the emergence of precolonial societies, their underlying cultural unities, and precapitalist socioeconomic formations, as well as the British conquest, the colonial state and economy, changes (e.g., educational, religious, social, and cultural), traditions of resistance and collaboration, the invention of tribes, politics (e.g., clan, district, and territorial), Mau Mau, decolonization and constitutional changes, the postcolonial state, and Kenya toward the end of the 20th century. *Instructor: Odhiambo*

HIST 421(F) TOPICS IN CHINESE HISTORY: DIVINATION IN CHINESE HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the role of divination in the political and social life of China from Neolithic times to the modern era, with emphasis on fortune-telling as a reflection of traditional Chinese attitudes, values, worldview, and cosmology. Limited enrollment (15). Prerequisite: any course in Chinese history or permission of instructor. Not offered 1997-98. *Instructor: Smith*

HIST 425(S) COLONIAL/POSTCOLONIAL DISCOURSE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of how Europeans and Americans have created definitions of who Third World peoples are (e.g., the constitution of colonized peoples as subjects of knowledge by their colonizers) in a process known as colonial discourse, and the reactions of the colonized, or postcolonial discourse. Includes an analysis of the theories of colonial and postcolonial discourse using examples from Latin America, Africa, and Southeast Asia. Prerequisite: a Third World history course or a course in literary or anthropological theory. For graduate credit, see HIST 524. *Instructor: Seed*

HIST 426(F) COMPARATIVE SLAVERY AND RACE RELATIONS IN THE AMERICAS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Comparative analysis of slavery and race relations in the U.S., the Caribbean, and Latin America, chiefly to the late 19th century. Includes the relative harshness or mildness of the institution of slavery in various systems, opportunities for advancement for former slaves, and the resultant nature of race relations. Not offered 1997-98. *Instructor: Cox*

**HIST 427(F) HISTORY OF THE CIVIL RIGHTS MOVEMENT,
1954-1984 (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Examination of the modern civil rights movement, with emphasis on the goals and strategies of major spokespersons and leaders, as well as the achievements of the campaign. Includes the extent of its success or failure and whether or not an “unfinished” agenda needs to be completed.

Instructor: Cox

**HIST 428(F) COMPARATIVE LABOR HISTORY OF THE AMERICAS
(3-0-3)**

DISTRIBUTION COURSE: GROUP II

This seminar will study the history of work and politics among free wage laborers in the Americas in the 19th and 20th centuries. We will read studies of workers’ experiences during the process of industrialization and urbanization as well as analyses of the creation of unions and progressive political movements. One goal will be to integrate the study of class, gender, and race as we consider workers’ lives in their homes, neighborhoods, at work, and in politics. We will compare the experiences of Latin America with those of the United States, but no prior background in Latin American history is required. *Instructor: Wolfe*

**HIST 430(S) SOCIAL PROBLEMS AND POLICY IN 19TH-CENTURY
BRITAIN (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Examination of sexual relations and the family as sites of social problems. Includes the discovery and construction of such problems as prostitution, illegitimacy, child abuse, abortion, and divorce. Research paper required. Not offered 1997-98. *Instructor: Wiener*

**HIST 435(S) COLONIALISM AND NATIONALISM IN THE
MIDDLE EAST (3-0-3)**

DISTRIBUTION COURSE: GROUP II

This seminar focuses on themes of colonialism and nationalism in the modern Middle East. Beginning with Napoleon’s invasion of Egypt in 1798, the seminar delves into specific case studies of European and Middle Eastern encounters and their representations that span both the 19th and 20th centuries. *Instructor: Makdisi*

HIST 438(F) WOMEN AND GENDER IN ISLAMIC SOCIETIES (3-0-3)

Examination of some features of the legal position and social realities of men and women in the Islamic world, with emphasis on how boundaries of gender have traditionally been drawn. Includes family and sexual ethics, the harem, polygyny, divorce, and eunuchs (who played an important role both in the military and in certain religious institutions). Also offered as WGST 455. *Instructor: Sanders*

**HIST 439(F) CHRISTIANITY AND THE WEST: FROM THE
BARBARIANS TO BEOWULF (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Study of the Christianization of England, France, and Ireland, from the invasion of the Roman empire by pagan barbarians to a Christian’s meditations upon his people’s pagan past. Includes the relationship between saints and sinners and the creation of an expansionist European Christianity. Not offered 1997-98. *Instructor: Nirenberg*

**HIST 440(F) SOCIAL AND ECONOMIC HISTORY OF EUROPE IN
THE MIDDLE AGES (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Seminar on selected problems in the social and economic history of medieval Europe. Not offered 1997-98.

HIST 445(F) RELIGIOUS RADICALISM AND ITS PERSECUTION IN THE AGE OF THE REFORMATION (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Seminar examining instances of religious radicalism and its persecution to explore the relationship between religious and political authority in Europe from 1400 to 1700. Includes Christian treatment of Jews, the Anabaptist movement, Quakerism, the Inquisition, the German Peasants' War, and the "witch craze." Limited enrollment. Not offered 1997-98. *Instructor: Quillen*

HIST 446(S) POWER AND POWERLESSNESS IN JEWISH HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of myths of Jews as all-powerful manipulators of international finances, media, and politics and Jews as powerless, from the fall of Jerusalem in 70 C.E. to Israel's formation in 1948. Includes Jewish and Christian use of these myths, their correspondence to Jewish collective behavior through the ages, and Jewish responses (e.g., political, social, and theological) to historical crises from the destruction of the first Temple through the Holocaust. Also offered as RELI 446. Not offered 1997-98. *Instructor: Fishman*

HIST 447(F) JEWISH PHILOSOPHY AND MYSTICISM (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of Jewish pietistic attitudes and practices, meditational techniques, theosophical speculation, and strategies for effecting redemption, both personal and collective. Includes selections from ethical wills, manuals for self-improvement, and philosophical and mystical treatises, from the rabbinic period through modern times. All readings in English translation. Not offered 1997-98. *Instructor: Fishman*

HIST 448(F) PERCEPTION OF THE JEWS: TACITUS TO MARX (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of social and cultural developments in Western European life and thought resulting from the dominant society's interaction with Jews and Judaism. Includes the Pauline Epistles, Eusebius, Pico della Mirandola, Reuchlin, Luther, Spinoza, Rabelais, Grimmelshausen, Voltaire, Hegel, Herder, Marx, and Freud. Frequent short papers and student presentations required. Not offered 1997-98. *Instructor: Fishman*

HIST 449(S) CONCEPTIONS OF FAMILY AND GENDER IN JEWISH HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of textual representations of gender and the relationships between the masculine and the feminine, as well as the connections between representations and behavior. Includes the Hebrew Bible, rabbinic literature, Crusade narratives, medieval Jewish philosophy, Kabbalistic texts, Hasidic exegesis, and Zionist ideological literature. All primary sources in English translation. Also offered WGST 415. Not offered 1997-98. *Instructor: Fishman*

HIST 450(S) TRADITIONAL CHINESE CULTURE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Enriched version of HIST 250. May not receive credit for both HIST 250 and 450. *Instructor: Smith*

HIST 451(F) PHILOSOPHIES AND THEOLOGIES OF HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of modern thought on the meaning and ultimate direction of history, from its roots in eschatology and Augustine to flowering in progress and historicism. Includes Vico, Lessing, Hegel, Ranke, Burckhardt, Nietzsche, Harnack, Troeltsch, Meinecke, Spengler, Heidegger, Butterfield, Dawson, Schweitzer, Jaspers, and Toynbee. Also offered as RELI 451. *Instructor: Stroup*

HIST 452(F) ART, POLITICS, AND SOCIETY IN 19TH-CENTURY FRANCE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Seminar on realism, impressionism, and "official" and institutional culture. Also offered as FREN 452. Not offered 1997-98. *Instructor: Sherman*

HIST 453(F) HISTORY AS TEXT IN MODERN FRANCE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of major 19th- and 20th-century historical texts both as narratives about the French past and as discourses embodying particular attitudes toward contemporary society and politics. Includes the emergence of a "scientific" history of the Revolution (e.g., Michelet, Tocqueville, and Taine) and its relation to the historical novel; the Annales school and the question of French identity (e.g., Bloch and Braudel); and the politics of theory in recent French history (e.g., Foucault and Chartier). Also offered as FREN 453. Offered with additional work as HIST 553. *Instructor: Sherman*

HIST 455(F) THE STATE, LAW, AND TERROR: 20TH-CENTURY RUSSIAN AND GERMAN LEGAL HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the development of despotic legal systems in Russia and Germany, using secondary and primary sources (e.g., transcripts of court proceedings). Includes the ambiguous inheritance of 19th-century liberalism, the attempt at a revolutionary revision of legal theory and practice under Bolshevism and Nazism, and the deadly effects of these retooled notions of law. Not offered 1997-98. *Instructor: Caldwell*

HIST 456(F) POLITICS AND CULTURE IN INTERWAR EUROPE, 1920-1940 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of the cultural and political crisis in Europe between the wars, using selections from major thinkers of the time and recent secondary literature. Includes the political challenge of fascism and communism, new developments in art and literature (e.g., expressionism and surrealism), and the development of a new mass culture, especially in Nazi Germany, Stalinist Russia, and republican France. Not offered 1997-98. *Instructor: Caldwell*

HIST 459(S) TOPICS IN MODERN GERMAN HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Seminar on selected topics in the history of Germany. Content varies from year to year. *Instructor: Caldwell*

HIST 460(F) ADVANCED SEMINAR IN ANCIENT HISTORY: THE AGE OF JUSTINIAN (3-0-3)

Study of developments in law, religion, foreign affairs, art and architecture, the status of women, and science during the reign of the Roman emperor Justinian (527-565), exploring changes from the classical to the medieval Mediterranean world. Includes ancient texts in translation and modern scholarship, with emphasis on research techniques and writing. Limited enrollment. Prerequisites: HIST 201 and 307 or permission of instructor. Not offered 1997-98. *Instructor: Maas*

HIST 462(F) VICTORIAN MARRIAGE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the institution and experience of marriage in 19th-century England, using sources ranging from novels to political debates to conduct and medical manuals. Includes the literary, psychological, and political power of matrimonial ideology and how it affected the self-understanding of Victorian men and women. Not offered 1997-98. *Instructors: Michie, Wiener*

HIST 463(S) CRIME AND PUNISHMENT IN BRITISH HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of how the British over the past 400 years developed one of the world's most orderly and peaceable societies, the price paid for that achievement, and how it gave way to the present "law and order crisis" not dissimilar to the American crisis. Includes a comparison of the British criminal justice history with that of continental Europe and the U.S. Substantial amount of writing and discussion required. Not offered 1997-98. *Instructor: Wiener*

HIST 464(S) FOREIGN POLICY OF NIXON AND KISSINGER (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Seminar requiring three short research papers. *Instructor: Matusow*

HIST 465(F) COLONIAL AMERICA TO 1754 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the growth of society, thought, and politics in the English colonies of North America. Not offered 1997-98. *Instructor: Gruber*

HIST 466(S) THE AMERICAN REVOLUTION, 1754-1789 (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the origins and implications of the American Revolution, with emphasis on constitutional, social, and political developments. Not offered 1997-98. *Instructor: Gruber*

HIST 469(S) U.S.-LATIN AMERICAN RELATIONS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of HIST 269. May not receive credit for both HIST 269 and 469. Not offered 1997-98. *Instructor: Seed*

HIST 471(S) SOCIETY, CULTURE, AND THE BODY IN MODERN FRANCE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Undergraduate version of HIST 571. Also offered as FREN 471. Not offered 1997-98. *Instructors: Harter, Sherman*

HIST 475(S) RADICAL THOUGHT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of Marxist and neo-Marxist theory, with emphasis on the Hegelian Marxism of Lukács and the "critical theory" of the Frankfurt School. Includes Horkheimer, Adorno, Benjamin, and Marcuse, as well as the critique of "instrumental reason," the neo-Marxist theory of culture, and the attempt at a Freud-Marx synthesis. Not offered 1997-98. *Instructor: Wolin*

HIST 476(S) TRADITION, IDENTITY, AND HISTORICAL WRITING (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the intersection of cultural tradition, collective identity, and historical writing in the modern West. Includes the uses made of the classical past in movements from Renaissance humanism to contemporary Afrocentrism, the development of nationalist traditions, and the creation of European identities through juxtapositions with other cultures. Limited enrollment. Also offered as FREN 476. Not offered 1997-98. *Instructors: Quillen, Sherman*

HIST 480(F) HISTORY OF MEN IN BRITAIN, 1750-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of what it meant to "be a man" in Britain between the 18th century and today and how male experiences and the meaning of manhood changed in society and culture. Also offered as WGST 416. Not offered 1997-98. *Instructor: Wiener*

HIST 481(F) SOUTHERN VIOLENCE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the legitimacy of the image of a violent South and the roles of violence in southern society. Includes the origins and legacies of southern violence from the 18th century to the present, with emphasis on the connections between different types of violence (e.g., domestic violence and racial violence). Not offered 1997-98. *Instructor: Dailey*

HIST 482(S) WOMEN IN THE AMERICAN SOUTH (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of how slavery and its legacies affected relationships among women and between women and men, what forces and issues brought southern women together and what held them apart, and how race affected the construction of gender. Includes women's lives in the South from the mature slave system of the 1830s through the civil rights movement of the 1960s. Also offered as WGST 417. Not offered 1997-98. *Instructor: Dailey*

HIST 483 THE POSTWAR SOUTH, 1865-1965 (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the Reconstruction South. Includes biracial democracy, populism, violence, race relations, and class relations. *Instructor: Dailey*

HIST 485(F) WOMEN AND GENDER IN RENAISSANCE ITALY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of whether or not there was a Renaissance for women and how gender influenced the roles of women and men in Renaissance society. Includes Renaissance and modern sources. Also offered as WGST 439. Not offered 1997-98. *Instructor: Brown*

HIST 488(S) MINORITIES IN THE MIDDLE AGES (3-0-3)**DISTRIBUTION COURSE: GROUP II**

The Middle Ages has been portrayed as the period in which Western "intolerance" was born and Europe became a persecuting society. It is in this period that the crusade was developed as a weapon against internal and external enemies, that the Inquisition was established to pursue heresy, that massacres of Jews and other minorities began, and that accusations of witchcraft, ritual murder, sodomy, etc., became common. We will explore some of the ways in which these minorities were persecuted. Limited enrollment. *Instructor: Nirenberg*

HIST 489 SEX AND GROUP IDENTITY, FROM BIBLICAL TIMES TO THE MODERN U.S. (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Comparative analysis of the problem of miscegenation (sexual intercourse between members of different religious, racial, or ethnic groups) in a variety of historical contexts. Includes biblical Judaism, early Christianity, medieval and early modern Spain, Latin America, modern Germany, and the U.S. Extensive reading in primary and secondary historical texts, as well as in the anthropology of marriage, required. Limited enrollment. Also offered as WGST 419. Not offered 1997-98. *Instructor: Nirenberg*

HIST 494(S) PROBLEMS IN 19TH- AND 20TH-CENTURY EUROPEAN HISTORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Discussion and proseminar on various problems of 19th- and 20th-century European history. Content varies from year to year. Limited enrollment (15). Not offered 1997-98. *Instructor: Stokes*

The following 500-level courses are for graduate students only.

HIST 501(F) MASTER'S HISTORICAL RESEARCH (hours variable)**HIST 502(S)**

Research for master's thesis. Must take both HIST 501 and 502 to receive credit.

HIST 503(F) GRADUATE TOPICS (hours variable)**HIST 504(S)****HIST 511(F) DIRECTED READINGS IN AMERICAN****HIST 512(S) HISTORY I (4-0-4 each semester)****HIST 513(F) DIRECTED READINGS IN AMERICAN****HIST 514(S) HISTORY II (4-0-4 each semester)****HIST 517(F) DIRECTED READINGS IN SCIENCE AND****HIST 518(S) TECHNOLOGY (4-0-4 each semester)****HIST 521(F) DIRECTED READINGS IN MEDIEVAL****HIST 522(S) HISTORY (4-0-4 each semester)**

HIST 524(F) COLONIAL/POSTCOLONIAL DISCOURSE (4-0-4)

Colonial Discourse and Postcolonial Theory Integrates literary, historical, and anthropological approaches into an interdisciplinary interpretation of the colonial experience and its legacies. The discussions and readings are theoretical but rely upon students to have firm control over a domain of knowledge. While the emphasis and readings of the course change yearly, Said, Fanon, and Foucault are always required. In 1998, the course will focus on the impact of cultural and economic globalization upon postcolonial societies. The course will also touch upon recent postcolonial debates over cultural differences from the Anglo-Indian experience. *Instructor: Seed*

HIST 525(F) DIRECTED READINGS IN AFRICAN**HIST 526(S) HISTORY (4-0-4 each semester)**

Instructor: Odhiambo

HIST 527(F) DIRECTED READINGS IN NON-WESTERN**HIST 528(S) HISTORY (4-0-4 each semester)****HIST 529(F) DIRECTED READINGS IN MODERN EUROPEAN****HIST 530(S) HISTORY I (4-0-4 each semester)****HIST 531(F) DIRECTED READINGS IN MODERN EUROPEAN****HIST 532(S) HISTORY II (4-0-4 each semester)****HIST 540(F) REVISIONISM IN AFRICAN HISTORY (4-0-4)**

Study of the impact on African historiography of theoretical constructs and debates organized around modernization, underdevelopment, dependency, world systems, and the Marxist/neo-Marxist theories originally derived from historical studies in Europe, Asia, and Latin America. Includes the histories of specific concepts such as feudalism, oriental despotism, modes of production, capitalism, social classes, nationalism, race, ethnicity, peasantries, class consciousness, and the state, as well as the ways they have been applied to the study of African history and have influenced the evolution of specific historiographies (e.g., "Africanist," "nationalist," and "radical" historiography). Not offered 1997-98. *Instructor: Odhiambo*

HIST 543(S) GRADUATE SEMINAR IN NATIONALISM (4-0-4)

Seminar exploring the ramifications of nationalism. Extensive reading and/or research paper required. Not offered 1997-98. *Instructor: Stokes*

HIST 545(F) THE GERMAN IDEOLOGY (4-0-4)

Examination of certain themes of 19th- and 20th-century German intellectual history. Includes Hegel, Marx, Nietzsche, Weber, Heidegger, and the Frankfurt School, with emphasis on attitudes and approaches of German intellectuals toward Enlightenment political culture. Not offered 1997-98. *Instructor: Wolin*

HIST 546(S) AN AGE OF EXTREMES: THE THEORY AND PRACTICE OF TOTALITARIANISM (4-0-4)

When the history of the 20th century is written, the outstanding feature will be, sadly, the emergence of ideological regimes with an unprecedented capacity for oppressing and/or eliminating vast numbers of persons. The course will examine the historical and political conditions that allowed such regimes to take root, with special attention to conflicts of historical interpretation that have arisen over their similarities and differences. After an introductory survey of the 20th century political landscape, we will concentrate on the theory and practice of Bolshevism, Fascism, and National Socialism. Not offered 1997-98. *Instructor: Wolin*

HIST 547(S) THE 2ND INTERNATIONAL AND AFTER: THE SOCIAL AND POLITICAL HISTORY OF MARXISM IN THE 20TH CENTURY (4-0-4)

This graduate seminar reexamines the Marxist tradition after Marx. We will look at the organizational strategy of social democracy before World War I as well as its theoretical debates; the Leninist challenge, and the attempt by others in the interwar period (Korsch, Lukacs, Gramsci) to rethink Marxism; Stalinism; Trotskyism and other anti-Stalinist tendencies; and Eastern European Marxist dissidence after 1945. Readings will include both primary and secondary texts, and will address issues of intellectual, cultural, social, and institutional history. *Instructor: Caldwell*

HIST 549(F) WOMEN AND GENDER IN 19TH-CENTURY EUROPE (4-0-4)

Introduction to current debates about women's history, the history of feminism, and gender history in 19th-century Europe. Includes public and private rights, republicanism and feminism, gender and difference, socialism, identity and cultural modernism, and gender and social reform. Also offered as WGST 420. Not offered 1997-98. *Instructor: Caldwell*

HIST 550(S) MAIN ISSUES IN CARIBBEAN HISTORY (4-0-4)

Examination of the major local and international forces and ideas that have shaped the course of the history of the Caribbean. *Instructor: Cox*

HIST 551(F) THE POLITICS OF RACE IN THE POST-CIVIL WAR SOUTH (4-0-4)

This course will examine the ways in which both the concrete public power of African Americans and discourses about race informed postbellum southern politics. Utilizing primary and secondary sources, including the best recent scholarship from a variety of scholarly disciplines, we will examine the imbrication of "the race question" with other social and political relations, particularly those of class and gender. Although we will pay attention to electoral politics and formal political alliances, the definition of "politics" in this course is broad and designed to breach the distance between public and private contests for dignity and power. At the heart of our deliberations will be the creation and dissolution of the Jim Crow South. *Instructor: Dailey*

HIST 552(S) GRADUATE SEMINAR IN HISTORICAL INTERPRETATION (4-0-4)

Not offered 1997-98. *Instructor: Haskell*

HIST 553(F) HISTORY AS TEXT IN MODERN FRANCE (4-0-4)

Graduate version of HIST 453. Also offered as FREN 553. *Instructor: Sherman*

HIST 565(S) GRADUATE READINGS SEMINAR IN EARLY AMERICA, 1607-1800 (4-0-4)

Study of major works on the English colonies of North America, as well as topics of particular interest to individual students. Not offered 1997-98. *Instructor: Gruber*

HIST 567(F) GRADUATE SEMINAR READINGS IN 20TH-CENTURY U.S. HISTORY (4-0-4)

For graduate students only. *Instructor: Matusow*

HIST 570(S) TOPICS IN FRENCH CULTURAL HISTORY (4-0-4)

A theoretical and methodological exploration of various approaches to, and issues in, the study of French and European cultures since the 18th century. Topics vary from year to year. Taught in English. *Instructor: Sherman*

HIST 571(S) SOCIETY, CULTURE, AND THE BODY IN MODERN FRANCE (4-0-4)

Seminar on the body as a central text, metaphor, and contested site in French culture and society since the 18th century. Includes readings from literary genres as well as from history, art history, and theory on sexuality and sexual difference, science, discipline and regulation, domination and submission, and the construction of the body in pornography, lyric poetry, political imagery, and painting. Taught in English. Also offered as FREN 571. Not offered 1997-98. *Instructors: Harter, Sherman*

HIST 575(F) INTRODUCTION TO DOCTORAL STUDIES (4-0-4)

Introduction to a range of methodological and theoretical approaches to historical research, as well as to important current debates about the nature of historical investigation and interpretation. Discussion, short weekly essays, and one longer paper based on course readings required. Open to beginning graduate students. *Instructor: Quillen*

HIST 581(F) GRADUATE SEMINAR IN MEDIEVAL HISTORY (4-0-4)

Not offered 1997-98.

HIST 582(S) ISSUES IN MODERN BRITISH HISTORY (4-0-4)

Open to all graduate students. Required for graduate students in British history. Not offered 1997-98. *Instructor: Wiener*

HIST 583(S) GRADUATE SEMINAR IN SOUTHERN HISTORY (4-0-4)

Seminar on religion and slavery in the Old South. Not offered 1997-98. *Instructor: Boles*

HIST 585(F) U.S. CONSTITUTIONAL AND LEGAL**HIST 586(S) HISTORY (4-0-4 each semester)**

Research into significant constitutional and legal questions, with emphasis on civil liberties, criminal law, civil-military relations, race relations, and urban problems. *Instructor: Hyman*

HIST 587(F) GRADUATE SEMINAR IN U.S. CULTURAL AND INTELLECTUAL HISTORY (4-0-4)

Intensive survey of the literature of cultural and intellectual history, with emphasis on 19th-century America. Not offered 1997-98. *Instructor: Haskell*

HIST 588(S) GRADUATE SEMINAR IN U.S. INTELLECTUAL/ CULTURAL HISTORY (4-0-4)

Topic for 1998: Pragmatism's Context. A research seminar centering on the period 1870-1920 and aiming at the production of a publishable essay. Often regarded as a watershed in both intellectual and cultural history, these years witnessed not only the emergence of Pragmatism but also the maturation of urban-industrial society, the rise of the modern university, and the unfolding of what is sometimes called the first "crisis of historicism." Some common readings will focus on the possibility of interrelations between these intellectual, cultural, and economic developments; other readings will relate the thought of Peirce, James, Dewey, and Mead to other varieties of fin de siècle historicism or to the work of modern pragmatists, such as Rorty or Habermas. *Instructor: Haskell*

HIST 589(S) SEX AND GROUP IDENTITY, FROM BIBLICAL TIMES TO THE MODERN UNITED STATES (4-0-4)

Graduate version of HIST 489. Not offered 1997-98. *Instructor: Nirenberg*

HIST 590(S) MACROHISTORY (4-0-4)

Specialization has been the strength of professional historiography in the 20th century. Nevertheless, broad, sweeping interpretations of European history continue to hold their fascination both for the public and for scholars. Recently, a number of serious books that attempt large-scale interpretations have appeared, thus renewing interest in this genre. In this seminar, we will read some of the classics of large-scale interpretation and some of the recent offerings. Participants will conduct discussions, write short position papers, and complete a research paper elaborating one aspect of a macrohistory they select. Work will be conducted in English. *Instructor: Stokes*

HIST 591-593 GRADUATE READING (1-0-1 each semester)

Graduate reading in conjunction with another course.

HIST 595(F) GRADUATE SEMINAR IN THE AMERICAN SOUTH (4-0-4)

Seminar on major scholarly literature of southern history. Includes readings, discussions, and a major paper on a historiographical topic decided in consultation with the instructor. Not offered 1997-98. *Instructor: Boles*

HIST 597(S) RESEARCH SEMINAR: LAW, SOCIETY, AND THE STATE IN PROGRESSIVE ERA AMERICA (4-0-4)

This graduate seminar explores the roles of legal institutions, voluntary associations, professions, and the state in defining and policing the problems of a "modern society" in the United States between 1877 and 1932. In particular, we will examine the emergence of distinctively modern forms of social regulation and provision from a variety of theoretical perspectives (especially those of Weber, Foucault, and Habermas) and a variety of historiographical vantage points, including legal history, the "new institutionalism," recent cultural histories of urban social policing, and the growing literature on the problem of gender in American welfare policy. *Instructor: Willrich*

HIST 800(F) PH.D. RESEARCH (hours variable)
HIST 800(S)

Research for doctoral dissertation.

Human Performance (HPER)

The School of Humanities/Department of Human Performance and Health Sciences

HPER 101 BASIC INSTRUCTION IN PHYSICAL ACTIVITY (0-2-0)

Development of skills, study of rules and strategy, overview of concepts of conditioning, and participation in physical activity. Required for all undergraduates. HPER 101 and 102 normally completed during the freshman year. Prerequisite: health data form submitted to the Student Health Service prior to registration. *Instructor: Spencer*

HPER 102 INTERMEDIATE INSTRUCTION IN PHYSICAL ACTIVITY (0-2-1)

See HPER 101. Required for all undergraduates. *Instructor: Spencer*

HPER 103-106 INTERMEDIATE INSTRUCTION IN PHYSICAL ACTIVITY (0-2-1 each semester)

Includes additional work. Open to all students on a space-available basis with priority to HPER majors. Prerequisites: HPER 101 and 102. *Instructor: Spencer*

HPER 120(S) SCIENTIFIC FOUNDATIONS (3-0-3)

Introduction to the scientific study of human movement. Includes anatomy and physiology, the physiology of exercise, motor learning, and kinesiology. Required for human performance and health science majors. *Instructor: Etnyre*

HPER 161(F) FOUNDATIONS OF HUMAN PERFORMANCE (3-0-3)

Study of the interactions of history, philosophy, economics, politics, education, and contemporary social issues in the evolution of sport. Formerly HPER 105. Open to freshmen and sophomores. Required for human performance and health science majors. *Instructor: Poindexter*

HPER 204(S) PSYCHOLOGICAL FOUNDATIONS (3-0-3)

Investigation of the theoretical and empirical psychological foundations of sport and physical activity. *Instructor: Poindexter*

HPER 205(F) SPORT IN AMERICAN SOCIETY (3-0-3)

Study of the development of contemporary sport and its interrelationships with existing social institutions. *Instructor: Lee*

HPER 250(S) ANATOMY AND PHYSIOLOGY (3-0-3)

Introduction to human anatomy and physiology, with emphasis on gross structure and basic concepts of function. *Instructor: Spence*

HPER 260(F) INTRODUCTION TO SPORT MANAGEMENT (3-0-3)

Study of management theory and practice related to the administration of sports organizations. *Instructor: Gallant*

HPER 302(S) KINESIOLOGY (3-0-3)

Study of the anatomical and mechanical bases of human movement, with emphasis on the analysis of sport and exercise skills. Prerequisites: HPER 120 and 250 or permission of instructor. *Instructor: Gibson*

HPER 304(S) FIRST AID/EMERGENCY CARE/CPR (1-1-1)

American Red Cross certification program for emergency care procedures for illness, traumatic injuries, and cardiopulmonary resuscitation. Limited enrollment (25). Also offered as HEAL 304. *Instructor: Vandenberg*

HPER 305(F) EXCEPTIONAL CHILDREN (3-0-3)

Studies of the exceptional child in relation to the educational process. *Instructor: Bearden*

HPER 308(S) PROGRAM DEVELOPMENT IN PHYSICAL EDUCATION (3-0-3)

Survey of teaching methodology, program development, and the implementation of teaching techniques and class management. Open only to juniors and seniors. *Instructor: Spencer*

HPER 311(F) MOTOR LEARNING (3-0-3)

Study of physiological, neurological, and psychological factors affecting voluntary skill acquisition and development. Corequisite: HPER 325. *Instructors: Etnyre, Poindexter*

HPER 314(F) METHODS PRACTICUM (0-3-1)**HPER 315(S)**

Practicum in the application of teaching methods in physical education activities. Co-/Prerequisite: HPER 308. *Instructor: Spencer*

HPER 319(F) MEASUREMENT AND EVALUATION (3-0-3)

Introduction to basic statistics, test construction and evaluation, and elementary measurement theory in human performance and health sciences. *Instructor: Disch*

HPER 321(F) PHYSIOLOGY OF EXERCISE (3-0-3)

Study of the physiologic response of the circulatory, respiratory, and muscular systems to exercise stress. Prerequisite: HPER 120 or permission of instructor. Corequisite: HPER 323. *Instructor: Gibson*

HPER 323(F) PHYSIOLOGY OF EXERCISE LABORATORY (0-3-1)

Study of ways to measure physiologic response to exercise stress. Corequisite: HPER 321. *Instructor: Gibson*

HPER 325(F) MOTOR LEARNING LABORATORY (0-3-1)

Study of ways to measure the physiological, neurological, and psychological factors affecting voluntary skill acquisition and development. Corequisite: HPER 311. *Instructor: Etnyre*

HPER 326(F) TRAINING ROOM PROCEDURES LABORATORY (0-3-1)

Field application in prevention, management, and rehabilitation of athletic injuries. Limited enrollment (24). Open only to juniors and seniors. *Instructor: Eggert*

- HPER 337(F) BASIC MOVEMENT-DANCE (0-3-1)**
Introduction to modern dance techniques and improvisation. *Instructor: Phenix*
- HPER 338(S) DANCE TECHNIQUE AND IMPROVISATION (0-3-1)**
Study of modern dance techniques and improvisations. *Instructor: Phenix*
- HPER 341 SPORTS MEDICINE AND TRAINING**
Considers athletic trauma and disorders affecting athletes, principles of physical conditioning and rehabilitation, injury management, and treatment modalities. Prerequisites: HPER 250 or permission of instructor. *Instructor: Spence*
- HPER 362(S) SPORT MARKETING AND PROMOTION (3-0-3)**
Examination of marketing and promotional strategies in sport. Open only to juniors and seniors. *Instructor: Lee*
- HPER 364(S) SPORT AND THE LAW (3-0-3)**
Study of general legal principles and their particular application within the sports industry. Open only to juniors and seniors. *Instructor: Gallant*
- HPER 375 SPORTS MEDICINE INTERNSHIP (hours variable)**
Internship for seniors in the sports medicine track. Prerequisite: permission of instructor. *Instructor: Spence*
- HPER 376 SPORT MANAGEMENT INTERNSHIP (hours variable)**
Internship for seniors in the sports management track. Prerequisite: permission of instructor. *Instructor: Gallant*
- HPER 377 EXERCISE SCIENCE INTERNSHIP (hours variable)**
Internship for upper-level students in the exercise science track. Prerequisite: permission of instructor. *Instructor: Gibson*
- HPER 378 COACHING INTERNSHIP (hours variable)**
Internship for seniors in the teaching/coaching track. Must contact instructor before the semester in which the internship will be taken. Prerequisite: permission of instructor. *Instructor: Spencer*
- HPER 412(F) MOTOR CONTROL (3-0-3)**
Exploration of the neurophysiological, behavioral, and biomechanical aspects of motor control. *Instructor: Etnyre*
- HPER 421 CONCEPTS OF PHYSICAL FITNESS, WELLNESS, AND PHYSIOLOGICAL TESTING (3-0-3)**
Study of the theoretical concepts regulating wellness, health-related physical fitness, and performance-related physical fitness. Introduction to clinical exercise testing and prescription, with emphasis on the pathophysiology of disease and the administration and organization of a physiology laboratory. Introduction to graduate-level research. Prerequisite: HPER 120, 250, 321, and 323. *Instructor: Gibson*
- HPER 431(S) TEACHING/COACHING OF BASKETBALL (2-0-2)**
Study of teaching/coaching methods and strategies for developing high-level sport performance in basketball. *Instructor: Cavallini*
- HPER 432(S) TEACHING/COACHING OF BASEBALL (2-0-2)**
Study of teaching/coaching methods and strategies for developing high-level sport performance in baseball. *Instructor: Disch*
- HPER 433(F) TEACHING/COACHING OF FOOTBALL (2-0-2)**
Study of teaching/coaching methods and strategies for developing high-level sport performance in football. *Instructor: Etnyre*

HPER 434(S) TEACHING/COACHING OF TRACK AND FIELD (2-0-2)

Study of teaching/coaching methods and strategies for developing high-level sport performance in track and field. *Instructor: Spence*

HPER 435 TEACHING/COACHING OF SOCCER (2-0-2)

Study of teaching/coaching methods and strategies for developing high-level sport performance in soccer.

HPER 436(F) TEACHING/COACHING OF VOLLEYBALL (2-0-2)

Study of teaching/coaching methods and strategies for developing high-level sport performance in volleyball. *Instructor: Disch*

HPER 440 RESEARCH METHODS (3-0-3)

Study of research methodology. Includes the scientific approach to research, measurement foundations, and designs and types of research. Prerequisite: HPER 319. *Instructor: Disch*

HPER 466 SPORT LABOR RELATIONS (3-0-3)

Study of antitrust and labor law principles and their particular application within the sport industry. Prerequisite: HPER 364. *Instructor: Gallant*

HPER 490(S) SEMINAR IN SPORTS MEDICINE (3-0-3)

Presentation of topics in sports-related injuries, management, and rehabilitation, using a case study approach. Prerequisite: HPER 341. *Instructor: Spence*

HPER 495(F) INDEPENDENT STUDY (hours variable)**HPER 496(S)**

Open only to juniors and seniors. *Instructor: Lee*

HPER 498 SPECIAL TOPICS (hours variable)

Instructor: Poindexter

Humanities (HUMA)

The School of Humanities

HUMA 101(F) INTRODUCTION TO HUMANITIES: CONSTRUCTING WESTERN TRADITIONS (3-0-3)

DISTRIBUTION COURSE: GROUP I - A FOUNDATION COURSE

Study of representative works in the Western tradition in literature, philosophy, and history, from Homer to Chaucer. Includes discussion sections.

HUMA 102(S) INTRODUCTION TO HUMANITIES: CONSTRUCTING WESTERN TRADITIONS (3-0-3)

DISTRIBUTION COURSE: GROUP I - A FOUNDATION COURSE

Continued study, in discussion and occasional lectures, of representative works in the Western tradition, from Michelangelo to Martin Luther King.

HUMA 103(F) INTRODUCTION TO MEDIEVAL CIVILIZATION: THE HIGH MIDDLE AGES, 1000-1492 (3-0-3)

DISTRIBUTION COURSE: GROUP I

Interdisciplinary introduction to the Middle Ages, which saw the spread of Christianity, Islam, and Rabbinic Judaism, the formation of modern European languages and political geography, and the beginnings of great artistic, philosophical, literary, and technological innovation. Includes the Crusades, economic growth and religious change, cathedral building, chivalry, the Black Death, and European expansion, using pictorial and architectural as well as literary and historical sources. Chronological continuation of HART 202 and HIST 202 (neither is a prerequisite). Also offered as ENGL 315. *Instructors: Henry, Neagley, Nirenberg*

HUMA 104(S) SELF IN TEXT AND IMAGE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of representations of the self in Western culture from late antiquity to the present in film, autobiography, the novel, and visual portraits, as well as in the relationships among these genres. May include Columbus's letters, Rousseau's *Confessions*, John Singleton Copley's portraits, Jane Austen's *Emma*, and Freud's *Dora*. *Instructors: Quillen, Sherman, Wallingford*

HUMA 105(F) MYTH, HISTORY, AND THE PROBLEM OF THE PAST (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of myth and history as two ways of interpreting the past that today evoke different responses: belief in history and pleasure in myth. Includes use of written texts and visual arts from classical antiquity and contemporary America, as well as cinema, to compare interpretive strategies. Also offered as HIST 205. Not offered 1997-98. *Instructors: Maas, Mackie*

HUMA 107(F) THE BIBLE IN WESTERN TRADITION (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of the multiple roles the Bible has played in Western culture, with emphasis on the Bible as a factor in communication shifts (media history), as a force in fostering the visual imagination (art history), and as a source of theological ideas impacting social arrangements (social/intellectual history). Also offered as RELI 200. *Instructor: Kelber*

HUMA 108(S) ART AND CULTURE, LATE MIDDLE AGES AND RENAISSANCE (3-0-3)

Exploration of themes in the art, architecture, and history of the late Middle Ages and Renaissance. Includes individualism, the development of science and technology, the role of religion and philosophy in cultural life, and the revival of classical Greco-Roman culture. *Instructors: Manca, Meagley*

HUMA 109(F) GREEK CIVILIZATION: AN INTRODUCTION (3-0-3)

This class will present an introduction to and overview of the great literary, artistic, and intellectual monuments of classical Greek civilization from Homer and the Bronze Age through the golden age of Classical Athens to the spread of Greek culture in the Hellenistic world. The historical background will be covered. Readings will consist mainly of primary sources. Two lectures and one discussion per week. Also offered as CLAS 207. *Instructor: Yunis*

HUMA 201 PUBLIC SPEAKING (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Prerequisite: permission of instructor. *Instructors: Huston, West*

HUMA 206 LIBRARY RESEARCH SOURCES AND STRATEGIES (1-0-1)

Instruction in library research. Includes the use of print and computerized library resources to locate and evaluate information on individual topics (useful when taken the same semester as a course requiring a research project).

HUMA 207(F) GREEK CIVILIZATION: AN INTRODUCTION (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Overview of the literary, artistic, and intellectual monuments of classical Greek civilization from Homer and the Bronze Age through the golden age of classical Athens to the spread of Greek culture in the Hellenistic world. Includes historical background and readings in primary sources. Two lectures and one discussion a week. Also offered as CLAS 207 and HIST 207. *Instructor: Yunis*

HUMA 211(F) INTRODUCTION TO ASIAN CIVILIZATIONS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Introduction to the great cultural traditions of Asia, past and present, with emphasis on evolving religious and philosophical traditions, artistic and literary achievements, and patterns of political, social, and economic change. Also offered as ASIA 211, HIST 206, and RELI 211. *Instructors: Klein, Nanxiu, Qian, Smith*

HUMA 230(S) RETHINKING THE WESTERN TRADITION (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Critical introduction to modern European intellectual history from the 18th century to the present viewed in light of Nietzsche's provocative assessment of "European nihilism." Includes major intellectual movements (e.g., the Enlightenment and romanticism) and their influence on developments in philosophy, literature, the arts, and political theory, with emphasis on how the movements emerged from, and responded to, the historical circumstances of the day. Also offered as HIST 230. Not offered 1997-98. *Instructor: Wolin*

HUMA 270(S) INTRODUCTION TO THE STUDY OF WOMEN AND GENDER (3-0-3)**DISTRIBUTION COURSE: GROUP I**

An introductory survey of issues in the study of women, including women's social, political, and legal status in the United States and around the world; feminist perspectives on sexuality, gender, family, and reproduction; and the implications of these perspectives for social and critical theory. Also offered as WGST 101. *Instructors: Derrick, Sanders*

HUMA 295(S) INTRODUCTION TO BUSINESS (3-0-3)

Prerequisite: acceptance to Rice Joint Venture Program or permission of instructor. Preference given to humanities majors. *Instructors: Matherly, Scheid*

HUMA 305(F) ADVANCED PUBLIC SPEAKING (3-0-3)

Study of the ancient origins of speech theory. Includes the application of contemporary speech theory in four in-class speeches. Open to students with at least two years of course work or experience in public speaking. Prerequisite: permission of instructor. Not offered 1997-98.

HUMA 307(F) ORAL INTERPRETATION/LITERATURE (3-0-3)

Comprehensive study of oral interpretation theory and techniques applied to the performance of dramatic literature, poetry, and prose.

HUMA 308 BUSINESS AND PROFESSIONAL SPEAKING (3-0-3)

Practical application of communication theory, with emphasis on oral presentations, interviewing, and small group dynamics. *Instructor: West*

HUMA 317(F) CONSULTING WITH STUDENT WRITERS (1-0-1)**HUMA 318(S)**

Study of the writing processes, writing problems, texts, and exercises in preparation for working with student writers. Includes role-playing. Meets for eight weeks. *Instructor: Driskill*

HUMA 320(F) INTRODUCTION TO MEDIEVAL CULTURE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Interdisciplinary introduction to the literature, art, philosophy, history, music, science, and cuisine of the Middle Ages, with guest lectures by specialists in various fields, slide lectures, and full-length films. Includes medieval Judaism, chivalry and feudalism, forgery, the rights of the poor, and the role of medieval women. *Instructor: Chance*

HUMA 330(F) INTRODUCTION TO TRADITIONAL CHINESE POETRY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Survey of traditional Chinese poetry and poetics, with emphasis on literary texts and theoretical essays. Includes "words and meanings," the formation and transformation of poetic genres, the rhetorical function of figurative language, allegory, poetic allusions and intertextuality, and poems both by women and in women's voices. All readings in English translation. No previous knowledge of Chinese literature or language required. Also offered as CHIN 330. *Instructor: Qian*

HUMA 332(S) CHINESE FILMS AND MODERN CHINESE LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of modern Chinese literature through the visual imagery of Chinese film. Includes analysis using literary history and narrative structure to link film adaptations to their original texts in Chinese fiction, with emphasis on narratology and movie theory. Films, subtitled in English, shown outside of class. All readings in English translation. No previous knowledge of Chinese literature or language required. Also offered as CHIN 332. *Instructor: Qian*

HUMA 334(F) INTRODUCTION TO TRADITIONAL CHINESE NARRATIVE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Introduction to the basic features of traditional Chinese narrative. Includes historical records, biographies, novels, and short stories, with emphasis on analysis of narrative structure and characterization using Western as well as Chinese literary theories. All readings in English translation. No previous knowledge of Chinese literature or language required. Also offered as CHIN 334. Not offered 1997-98. *Instructor: Qian*

HUMA 335(F) INTRODUCTION TO CLASSICAL CHINESE NOVELS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Examination of the basic characteristics of classical Chinese novels primarily through five important works from the 16th to 18th centuries: *Water Margin*, *Monkey*, *Golden Lotus*, *Scholars*, and *Dream of the Red Chamber*. Includes discussion of issues in comparative narratology and their application to the Chinese case. All readings in English translation. No previous knowledge of Chinese literature or language required. Also offered as CHIN 335. *Instructor: Qian*

HUMA 344(F) KOREAN LITERATURE (3-0-3)

The course focuses on reading selected modern Korean literature and watching Korean films. Korean history, philosophy, and religion will be introduced as background information. Since the text and films will be translated into English, no previous knowledge of Korean is required. Also offered as ASIA 344 and KORE 344. *Instructor: Yang*

HUMA 376(S) GENDER AND SCIENCE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Review of contemporary scholarship on the experiences of women in the natural sciences, the role of gender in the sciences, women and technology, and feminist critiques of traditional approaches to scientific methodology. Not offered 1997-98.

HUMA 401(S) INTERDISCIPLINARY SEMINAR IN ANCIENT MEDITERRANEAN CIVILIZATIONS (3-0-3)

Not offered 1997-98.

HUMA 420(S) INTEGRATIVE INTERDISCIPLINARY SEMINAR (3-0-3)

DISTRIBUTION COURSE: GROUP I

Senior seminar for students majoring in the study of women and gender. Content varies from year to year. Prerequisites: HUMA 270 and four additional courses in the study of women and gender. *Instructor: Long*

Italian Language and Culture (ITAL)

The School of Humanities/Department of French Studies

ITAL 101(F) ELEMENTARY ITALIAN I (4-0-4)

DISTRIBUTION COURSE: GROUP I

Concentration on all four language skills through classroom activities supplemented by work in the language lab. Includes the basic elements of Italian culture and civilization, an overview of current events and ideas, and a RAI (Radio Audizioni Italiane) video. Must complete ITAL 102 to receive credit for ITAL 101. *Instructor: Caflisch*

ITAL 102(S) ELEMENTARY ITALIAN II (4-0-4)

DISTRIBUTION COURSE: GROUP I

Continuation of ITAL 101. Includes video of the Italian opera *La Traviata*. *Instructor: Caflisch*

ITAL 201(F) INTERMEDIATE ITALIAN I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Review and consolidation of the structure of contemporary Italian, using literary and cultural readings as a basis for class discussion and conversation. Includes oral reports and compositions and a RAI (Radio Audizioni Italiane) video. *Instructor: Caflisch*

ITAL 202(S) INTERMEDIATE ITALIAN II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of ITAL 201. Includes a film by the Italian master Fellini. *Instructor: Caflisch*

ITAL 301(F) MODERN ITALIAN LITERATURE I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of modern Italian writers. Includes C. Levi, Silone, Palazzeschi's *Futurismo*, Verga, Pirandello, Tomasi Di Lampedusa, Sciascia, M. Bellonci, and the last Calvino. Content varies from year to year. Prerequisite: ITAL 202 or placement exam. *Instructor: Caflisch*

ITAL 302(S) IMAGES OF ITALIAN CULTURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of expression and development in Italy's historical, social, and artistic achievements. *Instructor: Caflisch*

ITAL 303(F) ITALIAN FOR WRITTEN AND ORAL COMMUNICATION (3-0-3)

DISTRIBUTION COURSE: GROUP I

Active practice of composition, oral analysis, and discussion based upon the reading of texts on selected issues and problems in contemporary Italian society. *Instructor: Caflisch*

Japanese (JAPA)

The School of Humanities/Department of Linguistics

JAPA 101(F) ELEMENTARY JAPANESE I (3-1-4)

DISTRIBUTION COURSE: GROUP I

Instructor: Sato

JAPA 102(S) ELEMENTARY JAPANESE II (3-1-4)

DISTRIBUTION COURSE: GROUP I

Instructor: Sato

JAPA 201(F) INTERMEDIATE JAPANESE I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Instructor: Sato

JAPA 202(S) INTERMEDIATE JAPANESE II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Instructor: Sato

JAPA 301(F) ADVANCED JAPANESE READING (3-0-3 each semester)

JAPA 302(S)

Instructor: Sato

Korean (KORE)

The School of Humanities/Department of Linguistics

KORE 101(F) ELEMENTARY KOREAN I (3-1-4)

DISTRIBUTION COURSE: GROUP I

Instructor: Yang

KORE 102(S) ELEMENTARY KOREAN II (3-1-4)

DISTRIBUTION COURSE: GROUP I

Instructor: Yang

KORE 201(F) INTERMEDIATE KOREAN I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Includes grammar, conversation, and composition. *Instructor: Yang*

KORE 202(S) INTERMEDIATE KOREAN II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Development of intermediate language skills, conversation, and composition. Prerequisite: KORE 201 (or equivalent). *Instructor: Yang*

KORE 301(F) ADVANCED KOREAN (3-0-3 each semester)

KORE 302(S)

Open to students who have completed KORE 201-202. Relatively good listening and reading skills required. *Instructor: Yang*

KORE 344(F) KOREAN LITERATURE (3-0-3)

Exploration of selections from modern Korean literature and film. Includes background survey of Korean history, philosophy, and religion. All texts and films in English translation. No previous knowledge of Korean required. Also offered as ASIA 344 and HUMA 344. *Instructor: Yang*

KORE 345(S) LINGUISTIC STRUCTURE OF KOREAN (3-0-3)

Study of Korean grammar. Includes Korean syntax, morphology, phonology, semantics, and discourse theory. Also offered as LING 345. *Instructor: Yang*

(0-0-0) = class hours/week - lab hours/week - credit/semester hours

Latin (LATI)

The School of Humanities/Department of Hispanic and Classical Studies

LATI 101(F) ELEMENTARY LATIN I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the fundamentals of Latin grammar, with emphasis on the acquisition of reading skills. Must complete LATI 102 to receive distribution credit for LATI 101. *Instructor: Wallace*

LATI 102(S) ELEMENTARY LATIN II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of LATI 101. *Instructor: Wallace*

LATI 201(F) INTERMEDIATE LATIN I (3-0-3)

Review of grammar and readings in medieval Latin. *Instructor: Wallace*

LATI 202(S) INTERMEDIATE LATIN II (3-0-3)

LATI 309(S) ADVANCED LATIN: HORACE (3-0-3)

Readings in the *Odes*, *Satires*, and *Letters*. Includes study of Horatian poetics. *Instructor: Yunis*

LATI 310(F) ADVANCED LATIN: VERGIL (3-0-3)

Study of the *Eclogues* and *Georgics*, with consideration of the pastoral and didactic genres in Greco-Roman poetry. *Instructor: Wallace*

LATI 491(F) DIRECTED READING (3-0-3 each semester)

LATI 492(S)

Independent work for qualified juniors and seniors in genres or authors not presented in other upper-level courses.

LATI 493(S) COMPREHENSIVE EXAMINATION (3-0-3)

Reading course taken by all classics and Latin majors in the spring semester of their senior year in preparation for the comprehensive examination given the last week of the semester. Open to classics and Latin majors only.

Linguistics (LING)

The School of Humanities

LING 110(F) LANGUAGES OF THE WORLD (3-0-3)

Survey of the world's languages: what are they, where are they, how are they? With emphasis on their diversity. Selected languages will be examined in more detail. *Instructor: Davis*

LING 200 INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to concepts and terminology in the scientific study of language. Includes sound systems (phonology), construction of words (morphology), organization of words in the sentence (syntax), meaning (semantics), and information flow (pragmatics), as well as a survey of interdisciplinary uses of linguistics such as historical linguistics (archaeology), dialectology (sociology), and language acquisition (psychology, cognitive sciences, and language teaching). Also offered as ANTH 200. *Instructors: Achard, Gildea*

LING 205(F) LANGUAGE AND SOCIETY (3-0-3)

This course treats language as a social phenomenon to show how language, personal identity, and institutions of social control interrelate. The course focuses on linguistic interaction in daily life and how gender, ethnic, class, activity, and geographic variation affect language use. Also offered as WGST 256. *Instructor: Polanyi*

LING 215(F) WORDS IN ENGLISH: STRUCTURE, HISTORY, USE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Introduction to the study of the internal structure of English words and the nature and history of English vocabulary. Includes measures to enhance awareness of the rich lexical resources of the language and to facilitate acquisition of scientific, technical, and humanistic vocabulary. No previous linguistics background required. Also offered as ENGL 215. *Instructor: Kemmer*

LING 300(S) LINGUISTIC ANALYSIS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Language as an object of scientific analysis, focused on how different languages organize semantic and pragmatic information into simple sentences. Topics: morphology, syntactic categories and constituency, propositional semantics, tense-aspect-modality, pragmatic information status, grammatical relations, and voice systems. Prerequisite: LING 200 or permission of instructor. Also offered as ANTH 300. *Instructor: Gildea*

LING 301(F) PHONETICS AND PHONOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introductory study of sound and sound systems in the world's languages. Includes the anatomy and physiology of the speech mechanism with a survey of all linguistic sounds it is known to produce, as well as organized patterns of speech sounds found cross-linguistically and three types of theories modeling these patterns: phonemic, feature-based (e.g., classical generative phonology), and autosegmental. Required for linguistics majors. Prerequisite: LING 200 or permission of instructor. Also offered as ANTH 301. *Instructor: Gildea*

LING 305(S) HISTORICAL LINGUISTICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the nature of language change in its phonological, morphological, syntactic, semantic, and sociocultural aspects, using the perspective of language acquisition. Includes techniques of internal and comparative reconstruction of proto-languages. Required for linguistics majors; may substitute LING 315. Prerequisites: LING 200, 300, or 301 or permission of instructor. Also offered as ANTH 305. *Instructor: Copeland*

LING 306(S) LANGUAGE AND THE MIND: COGNITIVE LINGUISTICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of language as a cognitive system. Includes the expression in language of linguistic data and thought patterns as evidence for the cognitive structures and processes that enable people to learn and use language. Prerequisite: LING 200 or 300 or permission of instructor. Not offered every year. *Instructor: Lamb*

LING 309(S) PSYCHOLOGY OF LANGUAGE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Human and other animal communication, structure of human language, word meaning and semantic memory, psychological studies of syntax, bilingualism, language and thought, language errors and disorders. Prerequisites: PSYC 101, 203, or permission of instructor. Enrollment limited to 50. Also offered as PSYC 309.

LING 310(F) THE STRUCTURE OF WRITTEN ENGLISH TEXTS (3-0-3)

This course deals with the linguistic structure of nonliterary written English texts. Both formal genres (essay, documentation) as well as less formal genres (notes to friends, e-mail, etc.) will be covered. Students will learn how written and spoken texts differ and will construct coherent, appropriate texts of their own. *Instructor: Polanyi*

LING 312(F) OLD ENGLISH (3-0-3)

DISTRIBUTION COURSE: GROUP II

Also offered as ENGL 312. Prerequisite: permission of instructor. *Instructor: Mitchell*

LING 313 LANGUAGE AND CULTURE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Investigates the relation between language and thought, language and worldview, and language and logic. Also offered as ANTH 313. *Instructor: Tyler*

LING 315(S) SEMANTICS: INTRODUCTION TO THE STUDY OF MEANING (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to basic approaches to the study of meaning in linguistics and related fields. Includes the cognitive representation of meaning, lexical categorization, conceptual structures, metaphor/metonymy, meaning change, pragmatic inference, and the relation of language and mind. Prerequisite: LING 200 or permission of instructor. Also offered as PSYC 315. *Instructor: Kemmer*

LING 316 THE LANGUAGE OF SONG (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of a linguistic approach to the study of songs, using recorded songs and live performances, with emphasis on folk songs. Includes the relationship of words to music and the contribution of the music of a song to its interpretation, as well as the kinds of meaning expressed by music (as opposed to words). Not offered 1997-98. *Instructor: Lamb*

LING 317(S) LANGUAGE AND COMPUTERS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to the relation of computers and natural language. Includes exercises in programming computers to exhibit language-like behavior and using computers to analyze language, as well as an overview of different aspects of computational linguistics (e.g., speech recognition, syntactic parsing, semantic representation, and neural net models) and of the use of corpora and concordance programs to discover syntactic and semantic patterns of English. No programming experience required. Not offered 1997-98. *Instructor: Barlow*

LING 330(F) CORPUS LINGUISTICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Investigation of the nature of linguistic representations from corpus-based analyses as compared to more traditional methodologies. Includes the collection of individual text data (or the exploration of existing text sources), the use of various text analysis programs (e.g., concordance software), and the production of lexical, syntactic, semantic, discourse, or cultural analyses of selected texts, using computer-based methods. Not offered 1997-98. *Instructor: Barlow*

LING 340(S) THEORY AND METHODS OF TEACHING ESL (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to the theory and practice of teaching a second language. Includes the process of language learning viewed from social, psychological, and linguistic perspectives, as well as commonly used teaching "methods," such as the audiolingual method, situational language teaching, the natural approach, and TPR, among others. Required for linguistics majors in second language acquisition concentration. *Instructor: Barlow*

LING 345(S) LINGUISTIC STRUCTURE OF KOREAN (3-0-3)

Study of Korean grammar. Includes Korean syntax, morphology, phonology, semantics, and discourse theory. Also offered as KORE 345. *Instructor: Yang*

LING 351(F) INTRODUCTION TO SANSKRIT I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Also offered as SANS 301. Not offered every year. *Instructor: Mitchell*

LING 352(S) INTRODUCTION TO SANSKRIT II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Also offered as SANS 302. Not offered every year. *Instructor: Mitchell***LING 394(S) STRUCTURE OF THE ENGLISH LANGUAGE (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Introduction to modern English grammar, phonology, and semantics. Required for linguistics majors in second language acquisition concentration. Also offered as ENGL 394. *Instructor: Davis***LING 395(S) HISTORY OF THE ENGLISH LANGUAGE (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Survey of 6,000 years of language history. Includes the phonological, morphological, syntactic, and semantic history of the English language from its Indo-European origins, through the Anglo-Saxon and Middle English periods, and up to the present day. Also offered as ENGL 395. Not offered every year. *Instructor: Mitchell***LING 402(S) SYNTAX AND SEMANTICS (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Study of semantic categories and their formal expression in morphological, syntactic, and lexical units and patterns. Required for linguistics majors; may substitute LING 416. Also offered as ANTH 402. *Instructor: Davis***LING 403(F) MODERN LINGUISTIC THEORY (3-0-3)**Study of selected theories of language, from de Saussure to the present. *Instructor: Davis***LING 405 TOPICS IN LANGUAGE CHANGE (3-0-3)**Survey of the current research on the nature of diachronic processes and their implications for linguistic theory. May include diachronic typology, issues in genetic classification, grammaticalization, syntactic change, and analogical change. Content varies from year to year. May be repeated for credit. Prerequisite: LING 305 (or equivalent). Not offered 1997-98. *Instructor: Kemmer***LING 406(S) COGNITIVE STUDIES IN ANTHROPOLOGY AND LINGUISTICS (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Relations between thought, language, and culture. Special emphasis given to natural systems of classification and their underlying logical principles. Also offered as ANTH 406. Not offered 1997-98. *Instructor: Tyler***LING 407(F) FIELD TECHNIQUES AND ANALYSIS (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Study of techniques and practice in the observation, analysis, and recording of a human language. Includes discussion of ethical issues in working with indigenous peoples. Limited enrollment. LING 300, 301, and 402 recommended. Prerequisite: permission of instructor. Also offered as ANTH 407. *Instructor: Kemmer***LING 408(S) FIELD TECHNIQUES AND ANALYSIS (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Continuation of LING 407. Prerequisite: permission of instructor. Also offered as ANTH 408. *Instructor: Kemmer***LING 409 SPECIAL TOPICS (3-0-3)**

DISTRIBUTION COURSE: GROUP II

Content varies from year to year. May be repeated for credit. Prerequisite: LING 300 or permission of instructor. Not offered 1997-98.

LING 410(S) RHETORIC (3-0-3)

Overview of classical theories of rhetoric. Includes intensive discussion of contemporary theories and applications in a wide variety of disciplines. Also offered as ANTH 412. *Instructor: Tyler*

LING 411 NEUROLINGUISTICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of language and the brain. Includes the organization of the brain (e.g., the localization of speech, language, and memory functions), hemispheric dominance, and the pathologies of speech and language associated with brain damage. Also offered as ANTH 411. Not offered 1997-98.

Instructor: Lamb

LING 412 LANGUAGE AND INTELLIGENCE (3-0-3)

Study of the primary basis of language in human intelligence. Includes exploration of conclusions from ethology, comparative psychology, and the study of learning and memory. Not offered 1997-98. *Instructor: Davis*

LING 413 FORMAL THEORIES OF SYNTAX (3-0-3)

Survey of current formal theories of syntax. Includes government and binding theory, lexical functional grammar, head-driven phrase structure grammar, and categorial grammar. Not offered 1997-98. *Instructor: Barlow*

LING 414 HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Application of linguistic theory and method in the analysis of cultural materials. Includes discourse analysis and the structure and interpretation of texts and conversation. Also offered as ANTH 414. Not offered 1997-98. *Instructor: Tyler*

LING 416 LANGUAGE UNIVERSALS AND TYPOLOGY (3-0-3)

Investigation of what human languages have in common and a range of ways in which they can differ. Includes marking patterns in particular linguistic domains (e.g., case marking, animacy, and passives) and theoretical and methodological issues. Not offered 1997-98. *Instructor: Kemmer*

LING 417 COMPUTER-ASSISTED LANGUAGE INSTRUCTION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the theory and practice of using computers and other technologies in the language classroom. Includes language software, authoring systems, hypertext, e-mail, video, videodisc, and CD-ROM, as well as a survey of the ways that technology can be used in language teaching and various aspects of courseware development. Required for linguistics majors in second language acquisition concentration. Not offered 1997-98. *Instructor: Barlow*

LING 422 TEXT AND CONTEXT (3-0-3)

Examination from a linguistic perspective of text, agency, identity, subject positioning, and interpretation in face-to-face interactions, in texts relating to texts, and in conventional interactions between readers and writers. Includes cognitive, computational, cultural, and critical perspectives. Not offered every year. Not offered 1997-98. *Instructor: Polanyi*

LING 423(F) LINGUISTIC STRUCTURE OF SPANISH (3-0-3)

Synchronic study of modern Spanish phonology and syntax, with emphasis on Hispanic American variants. Open to graduate students for credit. Also offered as SPAN 423, 424. Not offered 1997-98. *Instructor: Urrutibéheity*

LING 424 STUDIES IN HISPANIC LINGUISTICS (3-0-3)

Content varies from year to year. Topics include the history of the Spanish language, Old Spanish, Spanish American dialectology. Also offered as SPAN 315. Not offered in 1997-98. *Instructor: Urrutibéheity*

LING 425 DISCOURSE, SEMANTICS, AND PRAGMATICS (3-0-3)

Investigation of the relationship between the interpretation of utterances (e.g., semantics) and the context in which they are used (e.g., pragmatics) by examining how the intentions of the speaker/writer, as interpreted by the hearer/reader, influence the meaning assigned to an utterance. Includes contributions of both socially and linguistically defined contexts to discourse. Not offered 1997-98. *Instructor: Polanyi*

LING 433 LINGUISTIC STRUCTURE OF GERMAN (3-0-3)

DISTRIBUTION COURSE: GROUP I

Synchronic study of modern German phonology, syntax, and semantics. Includes aspects of discourse structure. Also offered as GERM 433. Not offered 1997-98. *Instructor: Copeland*

LING 434(F) HISTORY OF THE GERMAN LANGUAGE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of aspects of the history of German phonology, syntax, and semantics (with related systems) from its proto-Indo-European origins to the present. Also offered as GERM 434. *Instructor: Copeland*

LING 435 TOPICS IN GERMANIC LINGUISTICS (3-0-3)

Not offered 1997-98. *Instructor: Mitchell*

LING 436 TOPICS IN SLAVIC LINGUISTICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

The Old Church Slavic language in its Indo-European, Balto-Slavic, and Slavic contexts, with emphasis on the translation and analysis of representative Glagolitic and Cyrillic texts. Also offered as SLAV 436. Not offered 1997-98.

LING 437 A HISTORY OF LINGUISTICS (3-0-3)

Survey of linguistic theories from the book of "Genesis," the Pre-Socratics, Plato, Aristotle, the Alexandrians, the Stoics, the Modistae, the German Romantics, and the neo-grammarians down to de Saussure. Not offered 1997-98. *Instructor: Mitchell*

LING 443 TOPICS IN CHINESE LINGUISTICS (3-0-3)

Exploration of Mandarin syntax and semantics. Not offered 1997-98. *Instructor: Chen*

LING 451 TOPICS IN HAMITO-SEMITIC LANGUAGES (3-0-3)

An introductory reading course in a Semitic language. The course will include discussion of critical issues in Semitic or Afroasiatic linguistics. Topic changes from year to year but may include Ethiopic, Syriac, Arabic, or Coptic. Also offered as RELI 493. Not offered 1997-98.

LING 452 TOPICS IN HAMITO-SEMITIC LANGUAGES (3-0-3)

An introductory reading course in a Semitic language. The course will include discussion of critical issues in Semitic or Afroasiatic linguistics. Topic changes from year to year but may include Ethiopic, Syriac, Arabic, or Coptic. Also offered as RELI 494. Not offered 1997-98.

LING 455 ANCIENT LANGUAGES: NEAR EAST (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of the languages of the ancient Near East, with emphasis on the cuneiform system of writing and on Sumerian, Akkadian, and Hittite languages. Includes Hittite's relationship to the Indo-European family of languages. Not offered every year.

LING 467 COMPUTATIONAL PROJECTS (3-0-3)

Study of the computational modeling of natural language. Prerequisites: LING 317 and basic programming knowledge. Not offered 1997-98. *Instructors: Barlow, Lamb*

LING 470 LANGUAGE DESCRIPTION (3-0-3)

Study of the theory and practice of describing linguistic systems. Includes various notation systems and their relative advantages and disadvantages, types of information that should be included in a language description and ways of organizing it, computational techniques for testing descriptions, and devices to allow modification and expansion of the linguistic system in the course of its use. Not offered 1997-98.

LING 481 INDEPENDENT STUDY (3-0-3)**LING 482 HONORS PROJECT (3-0-3)**

Independent directed research toward preparation of an undergraduate honors project or thesis. Prerequisite: permission of instructor.

LING 490 DISCOURSE ANALYSIS (3-0-3)

Examination of linguistic, social, and cultural constraints on the structure and interpretation of discourse. Includes the formal modeling of discourse structure as a prerequisite for the computational implementation of discourse theory. Not offered 1997-98. *Instructor: Polanyi*

LING 500(S) LINGUISTIC ANALYSIS (3-0-3)

Graduate version of LING 300. *Instructor: Gildea*

LING 501(F) PHONETICS AND PHONOLOGY (3-0-3)

Graduate version of LING 301. *Instructor: Gildea*

LING 502(S) SYNTAX AND SEMANTICS (3-0-3)

Graduate version of LING 402. *Instructor: Davis*

LING 503(F) MODERN LINGUISTIC THEORY (3-0-3)

Graduate version of LING 403. *Instructor: Davis*

LING 504 TOPICS IN LANGUAGE CHANGE (3-0-3)

Graduate version of LING 405. Not offered 1997-98. *Instructor: Kemmer*

LING 505(S) HISTORICAL LINGUISTICS (3-0-3)

Graduate version of LING 305. *Instructor: Copeland*

LING 506(S) LANGUAGE AND THE MIND: COGNITIVE LINGUISTICS (3-0-3)

Graduate version of LING 306. *Instructor: Lamb*

LING 507(F) FIELD TECHNIQUES AND ANALYSIS (hours variable)

Graduate version of LING 407. *Instructor: Kemmer*

LING 508(S) FIELD TECHNIQUES AND ANALYSIS (hours variable)

Continuation of LING 507. *Instructor: Kemmer*

LING 510(F) THE STRUCTURE OF WRITTEN ENGLISH TEXTS (3-0-3)

Graduate version of LING 310. *Instructor: Polanyi*

LING 515(S) SEMANTICS: INTRODUCTION TO THE STUDY OF MEANING (3-0-3)

Graduate version of LING 315. *Instructor: Kemmer*

LING 530(F) CORPUS LINGUISTICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Graduate version of LING 330. Not offered 1997-98. *Instructor: Barlow*

LING 540(S) THEORY AND METHODS OF TEACHING ESL (3-0-3)Graduate version of LING 340. *Instructor: Barlow***LING 550 DEPARTMENTAL COLLOQUIUM (1-0-1)**

Weekly colloquium for faculty, graduate students, and invited guests to present reports on current research or to discuss current issues in linguistics.

LING 551 SEMINAR IN LINGUISTIC THEORY (3-0-3)

Topics vary from year to year.

Topic for Fall 1997: THE NEUROCOGNITIVE BASIS OF LANGUAGE.

Problems in the neurobiology of language. The use of neurological evidence in testing hypotheses of the organization and operation of linguistic structure. Prerequisite: LING 411. *Instructor: Lamb*

Topic for Spring 1998: PHONOLOGY

Survey of current theories in phonology, beginning with autosegmental theory, then going through lexical phonology, feature geometry, moraic theories of prosody, metrical stress theory, and optimality theory. Concludes with recent functionalist proposals arising out of laboratory phonology and cognitive grammar. Prerequisite: LING 301 or 501 or permission of instructor. *Instructor: Gildea***LING 552 SEMINAR IN SYNTAX AND SEMANTICS (3-0-3)**

Not offered 1997-98.

LING 553 SEMINAR IN LINGUISTIC STRUCTURE (3-0-3)

Not offered 1997-98.

LING 554 SEMINAR IN SEMANTIC THEORY (3-0-3)

Examination of current theories in the area of semantics/pragmatics. May be repeated for credit.

Prerequisite: LING 315/515 (or equivalent). Not offered 1997-98. *Instructor: Kemmer***LING 555 SEMINAR IN HISTORICAL LINGUISTICS (3-0-3)**

Not offered 1997-98.

LING 570 LANGUAGE DESCRIPTION (3-0-3)

Graduate version of LING 470. Not offered 1997-98.

LING 581(F) GRADUATE RESEARCH (hours variable)**LING 582(S)****LING 590(F) TEACHING LINGUISTICS (hours variable)****LING 591(S)***Instructor: Copeland***LING 610(F) SEMINAR: TOPICS IN LANGUAGE
METHODOLOGY (3-1-4)**Exploration and analysis of a range of theories, issues and problems in foreign language instruction. Areas of inquiry include: the nature of language acquisition, pedagogical methods, instructional technologies, development of teaching materials, and testing/assessment. Also offered as FREN 610, GERM 510, SPAN 610. Offered every year. Required course for all graduate language teaching assistants. *Instructors: Barlow, Kecht***LING 800 DISSERTATION RESEARCH (hours variable)**

Managerial Studies (MANA)

The School of Social Sciences

MANA 404 MANAGEMENT COMMUNICATIONS IN A CONSULTING SIMULATION (3-0-3)

Capstone course. Includes communication processes related to the management function and the integration of knowledge and approaches from other courses in the managerial studies major. Open only to managerial studies majors who have completed 8 of the 10 other required courses
Instructor: Tebeaux

MANA 497(F) INDEPENDENT STUDY (3-0-3)

Instructor: Zeff

MANA 498(S) INDEPENDENT STUDY (3-0-3)

Instructor: Zeff

Mathematics (MATH)

The Wiess School of Natural Sciences

MATH 101 SINGLE VARIABLE CALCULUS I (3-0-3)

DISTRIBUTION COURSE: GROUP III

Study of differentiation, extrema, Newton's method, integration, fundamental theorem of calculus, area, volume, natural logarithm, exponential, and basic techniques of integration. May substitute MATH 111-112 or take MATH 101 after completing MATH 111.

MATH 102 SINGLE VARIABLE CALCULUS II (3-0-3)

DISTRIBUTION COURSE: GROUP III

Continuation of MATH 101. Includes further techniques of integration, arc length, surface area, Simpson's rule, and L'Hopital's rule, as well as infinite sequences and series, tests for convergence, power series, radius of convergence, polar coordinates, parametric equations, and arc length.

MATH 111(F) FUNDAMENTAL THEOREM OF CALCULUS (3-0-3)

DISTRIBUTION COURSE: GROUP III

Study of calculus, forming with MATH 112 a slower-paced version of MATH 101-102. Includes less detail in the coverage of infinite series. May take MATH 111-112 followed by MATH 102 or MATH 111 followed by MATH 101-102.

MATH 112(S) CALCULUS AND ITS APPLICATIONS (3-0-3)

DISTRIBUTION COURSE: GROUP III

See MATH 111.

MATH 211 ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA (3-0-3)

DISTRIBUTION COURSE: GROUP III

Study of ordinary differential equations (e.g., solutions to separable and linear first-order equations and to higher-order linear equations with constant coefficients, the properties of solutions to differential equations, and numerical solution methods) and linear algebra (e.g., vector spaces and solutions to algebraic linear equations, dimension, eigenvalues, and eigenvectors of a matrix), as well as the application of linear algebra to first-order systems of differential equations and the qualitative theory of nonlinear systems and phase portraits. Use of the computers in OwlNet as part of each homework assignment required. Prerequisite: MATH 102.

MATH 212 MULTIVARIABLE CALCULUS (3-0-3)

Study of gradient, divergence, and curl, Lagrange multipliers, multiple integrals, and spherical coordinates, as well as line integrals, conservative vector fields, Green's theorem, Stokes's theorem, and Gauss's theorem. May substitute MATH 221-222.

MATH 221(F) HONORS CALCULUS III (3-0-3)

This course and MATH 222 include the material of MATH 212 and more. Topology of $\mathbb{R}^n$, calculus for functions of several variables, linear and multilinear algebra, theory of determinants, inner product spaces, exterior differential calculus, and integration on manifolds. A student may not receive credit for both MATH 212 and 222. Prerequisite: permission of department.

MATH 222(S) HONORS CALCULUS IV (3-0-3)

See MATH 221.

MATH 321(F) INTRODUCTION TO ANALYSIS I (3-0-3)

Thorough treatment of basic methods of analysis (e.g., metric spaces, compactness, sequences, and series of functions). Includes topics in analysis (e.g., Hilbert spaces, Fourier series, and Sturm-Liouville theory). Prerequisite: MATH 212 or 222.

MATH 322(S) INTRODUCTION TO ANALYSIS II (3-0-3)

See MATH 321. Includes proofs of the basic results for multivariable calculus (MATH 321 provides proofs for single-variable calculus).

MATH 355(F) LINEAR ALGEBRA (3-0-3)

DISTRIBUTION COURSE: GROUP III

Study of linear transformations and matrices, the solution of linear equations, eigenvalues and eigenvectors, and quadratic, rational canonical, and Jordan canonical forms. May not receive credit for both MATH 355 and CAAM 310.

MATH 356(S) ABSTRACT ALGEBRA (3-0-3)

DISTRIBUTION COURSE: GROUP III

Groups: normal subgroups, factor groups, and Abelian groups. Rings: ideals, Euclidean rings, and unique factorization. Fields: algebraic extensions and finite fields. Students may not receive credit for both MATH 356 and MATH 463.

MATH 365(S) NUMBER THEORY (3-0-3)

DISTRIBUTION COURSE: GROUP III

Study of properties of numbers depending mainly on the notion of divisibility. Includes continued fractions. Offered in alternate years.

MATH 366(S) GEOMETRY (3-0-3)

DISTRIBUTION COURSE: GROUP III

Study of Euclidean, spherical, hyperbolic, and projective geometry, with emphasis on the similarities and differences found in them. Includes the study and use of isometries and other transformations and a discussion of the history of the development of geometric ideas. Recommended for prospective high school teachers. Offered in alternate years.

MATH 381(F) INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS (3-0-3)

Introduction to partial differential equations, with emphasis on equations from science and engineering, using elementary methods. Includes the use of separation of variables to study various boundary value problems and an in-depth coverage of Fourier series and various special functions (e.g., Bessel functions and Legendre polynomials).

MATH 382(S) COMPLEX ANALYSIS (3-0-3)

Study of the Cauchy integral theorem, Taylor series, and residues, as well as the evaluation of integrals by means of residues, conformal mapping, and application to two-dimensional fluid flow. May not receive credit for both MATH 382 and MATH 427.

MATH 390 UNDERGRADUATE COLLOQUIUM (1-0-1)

Lectures by undergraduates on mathematical topics not usually covered in other courses. Presentation of one lecture and attendance at all sessions required.

MATH 401(F) DIFFERENTIAL GEOMETRY (3-0-3)

Study of the differential geometry of curves and surfaces in $\mathbb{R}^3$. Includes an introduction to the concept of curvature and thorough treatment of the Gauss-Bonnet theorem.

MATH 402(S) DIFFERENTIAL GEOMETRY (3-0-3)

Introduction to Riemannian geometry. Content varies from year to year. Prerequisites: MATH 401 and either MATH 443 or permission of instructor.

MATH 423(F) PARTIAL DIFFERENTIAL EQUATIONS (3-0-3)

Study of the wave equation, Laplace's equation, and heat equation. Includes first-order hyperbolic systems, the Cauchy-Kowalewski theorem, potential theory, Dirichlet and Neumann problems, integral equations, and elliptic equations.

MATH 424(S) PARTIAL DIFFERENTIAL EQUATIONS (3-0-3)

Study of the theory of distributions and fundamental solutions. Content varies from year to year. Prerequisite: MATH 423.

MATH 425(F) INTEGRATION THEORY (3-0-3)

Study of the Lebesgue theory of measure and integration.

MATH 426(S) TOPICS IN REAL ANALYSIS (3-0-3)

Content varies from year to year. May include Fourier series, harmonic analysis, probability theory, advanced topics in measure theory, ergodic theory, and elliptic integrals.

MATH 427(S) COMPLEX ANALYSIS (3-0-3)

Study of the Cauchy-Riemann equation, power series, Cauchy's integral formula, residue calculus, and conformal mappings.

MATH 428(F) TOPICS IN COMPLEX ANALYSIS (3-0-3)

Content varies from year to year. May include the Riemann mapping theorem, uniformization, Runge's theorem, elliptic function theory, the prime number theorem, and Riemann surfaces.

MATH 443(S) GENERAL TOPOLOGY (3-0-3)

Study of basic point set topology. Includes a treatment of cardinality and well ordering, as well as metrization. MATH 321 or permission of instructor recommended.

MATH 444(F) GEOMETRIC TOPOLOGY (3-0-3)

Introduction to algebraic methods in topology and differential topology. Includes elementary homotopy theory and covering spaces. Co-/Prerequisite: MATH 356 or 463 and MATH 321 or 443 or permission of instructor.

MATH 445(S) ALGEBRAIC TOPOLOGY (3-0-3)

Introduction to the theory of homology. Includes simplicial complexes, cell complexes, and cellular homology and cohomology, as well as manifolds, and Poincaré duality. Prerequisites: MATH 444 and 356 or 463 or permission of instructor.

MATH 463(F) ALGEBRA I (3-0-3)

Study of groups, rings, fields, and vector spaces. Includes matrices, determinants, eigenvalues, canonical forms, and multilinear algebra, as well as the structure theorem for finitely generated Abelian groups and the Galois theory.

MATH 464(S) ALGEBRA II (3-0-3)

Continuation of MATH 463.

MATH 490 SUPERVISED READING (hours variable)**MATH 501(F) TOPICS IN DIFFERENTIAL****MATH 502(S) GEOMETRY (3-0-3 each semester)****MATH 517(F) MATHEMATICAL PHYSICS (3-0-3 each semester)****MATH 518(S)****MATH 521(F) ADVANCED TOPICS IN REAL****MATH 522(S) ANALYSIS (3-0-3 each semester)**

Seminar in real analysis. May include singular integral operators, maximal functions, Hardy spaces, Lipschitz spaces, and Sobolev spaces. Prerequisite: MATH 425 or permission of instructor.

MATH 523(F) FUNCTIONAL ANALYSIS (3-0-3)

Seminar on locally convex spaces, Banach spaces, Hilbert spaces, and special topics.

MATH 526(S) TOPICS IN COMPLEX ANALYSIS (3-0-3)**MATH 527(F) ERGODIC THEORY AND TOPOLOGICAL DYNAMICS (3-0-3)****MATH 541/542 TOPICS IN ADVANCED TOPOLOGY (3-0-3 each semester)****MATH 590 CURRENT MATHEMATICS SEMINAR (1-0-1)**

Lectures on topics of recent research in mathematics delivered by mathematics graduate students and faculty. Prerequisite: graduate student standing or permission of department.

MATH 591 GRADUATE TEACHING SEMINAR (1-0-1)

Discussion of teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Prerequisite: graduate student standing or permission of department.

MATH 800 THESIS AND RESEARCH (hours variable)

Mechanical Engineering (MECH)

The George R. Brown School of Engineering/Department of Mechanical Engineering and Materials Science

MECH 200(S) CLASSICAL THERMODYNAMICS (3-0-3)

Explication of the fundamental laws of classical thermodynamics and deductions from them. Includes applications with particular attention to pure substances. Required for mechanical engineering majors. Prerequisites: PHYS 101 and 102. *Instructor: Chapman*

MECH 211 ENGINEERING MECHANICS (3-0-3)

Study of the equilibrium of static systems, the dynamics of a particle and particle systems, and rigid-body dynamics. Includes elements of vibrational analysis. Required for mechanical engineering and materials science and engineering majors. Prerequisites: PHYS 101 and MATH 101 and 102. Also offered as CIVI 211. *Instructors: Angel, Merwin, Wang*

MECH 311(S) MECHANICS OF DEFORMABLE SOLIDS (3-0-3)

Analysis of stress and the deformation of solids with applications to beams, circular shafts, and columns. Required for mechanical engineering majors. Prerequisite: MECH 211. *Instructor: Wang*

MECH 314(S) INTRODUCTION TO MECHANICAL DESIGN (3-0-3)

Introduction to the design process. Includes materials selection and design methods. Prerequisite: MECH 311 or CIVI 300. Not offered every year.

MECH 321(F) COMPUTATIONAL MECHANICS IN DESIGN (3-0-3)

Study of the fundamental theory of computational mechanics for thermal, fluid, and solid systems. Includes "hands-on" experience with commercial software and applications to open-ended design problems. Prerequisites: MECH 200, 311 (or CIVI 300), and 371. Not offered every year.

MECH 331(S) JUNIOR LABORATORY I (0-3-1)

Instruction in static and impact testing of engineering materials. Includes beam deflection and shear center experiments, as well as the application and testing of strain gauges. Required for mechanical engineering majors in B.S. program. *Instructor: Angel*

MECH 332(S) JUNIOR LABORATORY II (0-3-1)

Instruction in fluid mechanics and thermodynamics. Required for mechanical engineering majors in B.S. program. *Instructor: McStravick*

MECH 340 INDUSTRIAL PROCESS LAB (0-3-1)

Practical experience in, and observation of, selected industrial processes. Must sign up in department office. Open only to mechanical engineering majors. Required for mechanical engineering majors in B.S. program. *Instructor: Gesenhues*

MECH 371(F) FLUID MECHANICS I (3-0-3)

Introduction to fluid statics and dynamics. Includes the development of the fundamental equations of fluid mechanics and their application to problems of engineering interest. Required for mechanical engineering majors. Prerequisites: MECH 200 and 211 and MATH 212. *Instructor: Meade*

MECH 372(S) FLUID MECHANICS II (3-0-3)

Continuation of MECH 371. Includes airfoil theory, lubrication, boundary layers, and turbulence. Required for mechanical engineering majors in B.S. program. Prerequisite: MECH 371. *Instructor: Collis*

MECH 380(S) INTRODUCTION TO MECHANICAL EFFECTS IN TISSUES (3-0-3)

Development of a general background in physiology and in advanced mechanics for applications in medicine. Includes bone mechanics in remodeling, cartilage and ligament mechanics, and muscle mechanics, as well as an "on-paper" design project on a subject selected by students. Prerequisites: MECH 211 and 311 or CIVI 300. *Instructor: Harrigan*

MECH 401(F) MECHANICAL DESIGN APPLICATIONS (3-0-3)

Applications of the principles of mechanical design to the analysis and design of machine elements. Required for mechanical engineering majors in B.S. program. Prerequisite: MECH 311 or CIVI 300. *Instructor: Harrigan*

MECH 403(F) COMPUTER-AIDED DESIGN (3-0-3)

Investigation of the integration of the computer into the area of design. Includes such subjects as optimization, simulation, finite elements, and expert systems. Required for mechanical engineering majors in B.S. program. Prerequisite: CAAM 211. *Instructor: Akin*

MECH 404(S) SENIOR DESIGN PROJECT (0-12-4)

Required for mechanical engineering majors in B.S. program; may substitute MECH 407-408.
Instructor: McStravick

MECH 407(F) MECHANICAL DESIGN PROJECT I (0-9-3)

Team projects to develop designs for mechanical devices. Various areas of interest for designs are available for the student. *Instructor: Cunningham*

MECH 408(S) MECHANICAL DESIGN PROJECT II (0-12-4)

Team production, fabrication, and demonstration of devices developed for MECH 407. Prerequisite: MECH 407. *Instructor: Cunningham*

MECH 411(F) ANALYTICAL DYNAMICS (3-0-3)

Application of energy methods in the study of particle and rigid-body dynamics, electric circuits, electromechanical systems, and continuous dynamic systems. Required for mechanical engineering majors. Prerequisite: MECH 211. *Instructor: Ghorbel*

MECH 412(S) VIBRATIONS (3-0-3)

Analysis of discrete and continuous linear vibrating systems, with emphasis on multi-degree-of-freedom systems. Includes approximate methods. Required for mechanical engineering majors in B.S. program. Prerequisite: MECH 411. *Instructor: Spanos*

MECH 420(S) FEEDBACK CONTROL OF DYNAMIC SYSTEMS (3-0-3)

Introduction to feedback control, system modeling in a frequency domain, and space analysis and design. *Instructor: Ghorbel*

MECH 431(F) SENIOR LABORATORY I (0-3-1)

Instruction in gas dynamics, heat transfer, applied thermodynamics, and engine cycles. Required for mechanical engineering majors in B.S. program. *Instructor: McStravick*

MECH 435(F) ELECTROMECHANICAL DEVICES AND SYSTEMS (3-0-3)

Introduction to the physical and engineering aspects of electromechanical sensors and actuators. Includes underlying physical phenomena, practical devices, electrical and mechanical interfacing, and control of electromechanical systems. Prerequisite: ELEC 241 or 242. Also offered as ELEC 35. *Instructor: Wise*

MECH 471(F) APPLICATIONS OF THERMODYNAMICS (3-0-3)

Applications of thermodynamics to various systems of interest in mechanical engineering, with emphasis on energy conversion, refrigeration, and psychrometrics. Required for mechanical engineering majors in B.S. program. Prerequisite: MECH 200. *Instructor: Chapman*

MECH 472(F) THERMAL SYSTEMS DESIGN (3-0-3)

Design and synthesis of systems based on applications of thermodynamics, fluid mechanics, heat transfer, economics, and optimization theories. Prerequisites: MECH 200 and 371, 372, 471, or 481. Not offered every year. *Instructor: Meade*

MECH 476 FLUID MACHINERY (3-0-3)

Study of continuous-flow machinery analysis and design problems. Prerequisite: MECH 371. Not offered every year.

MECH 481(S) HEAT TRANSFER (4-0-4)

Study of the general principles of heat transfer by conduction, convection, and radiation. Includes their application to problems of engineering practice. Required for mechanical engineering majors. *Instructor: Bayazitoglu*

MECH 482(S) INTERMEDIATE HEAT TRANSFER (3-0-3)

Continuation of MECH 481. Includes applications to various problems in mechanical engineering. Prerequisite: MECH 481. *Instructor: Bayazitoglu*

MECH 485(S) BIOMECHANICS OF HUMAN MOVEMENT (3-0-3)

Application of basic mechanics to the study of human movement. Includes joint mechanics and locomotion analysis, Lagrange and Newton-Euler methods, and basic feedback control, signal analysis, and data acquisition techniques. Prerequisite: MECH 211. *Instructor: Ambrose*

MECH 496(F) ROBOTICS LABORATORY (0-3-1)

Lab for computer vision experiments, the programming of a mobile robot and industrial type PUMA robot, and operation of a Computer Numerical Control (CNC) mill and industrial-size CNC lathe, as well as projects. Corequisite: MECH 498. Also offered as ELEC 496. *Instructor: Ghorbel*

MECH 498(F) INTRODUCTION TO ROBOTICS (3-0-3)

Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Also offered as ELEC 498. *Instructor: Ghorbel*

MECH 501(F) ANALYTICAL DYNAMICS (3-0-3)

Graduate version of MECH 411. Term project required. *Instructor: Ghorbel*

MECH 502(S) VIBRATIONS (3-0-3)

Graduate version of MECH 412. Term project required. *Instructor: Spanos*

MECH 507(F) NONLINEAR DYNAMIC SYSTEMS ANALYSIS I (3-0-3)

Introduction to analytical methods describing functions (e.g., singular point and phase plane analysis) and to stability analysis via Lyapunov functions, digital computer simulation methods parameter estimation, and sensitivity analysis. Includes an introduction to the chaotic behavior of nonlinear dynamic systems. Also offered as ELEC 507. *Instructor: Clark, Jr.*

MECH 508(S) NONLINEAR SYSTEMS ANALYSIS II (3-0-3)

Review of the fundamental properties of nonlinear systems. Includes nonlinear ordinary differential equations (e.g., the existence and uniqueness of solution), Lyapunov stability (e.g., stability definitions, Lyapunov's direct method, invariance theory, stability of linear systems, Lyapunov's linearization methods, and converse theorems), and input-output stability (e.g., the small gain theorem and passivity theorem), as well as case studies showing applications to nonlinear and adaptive control and robotics. Also offered as ELEC 508. *Instructor: Ghorbel*

MECH 509(S) DYNAMIC ANALYSIS OF OFFSHORE STRUCTURES (3-0-3)

Description of loads on offshore structures on both a deterministic and probabilistic basis. Includes methods for calculating structural response, using examples of drill strings, marine risers, and fixed and compliant structures. Also offered as CIVI 509. Not offered every year. *Instructor: Spanos*

MECH 510(S) ELASTO DYNAMICS (3-0-3)

Study of the propagation of waves in linearly elastic strings, fluids, and solids. Includes surface waves, wave reflection and refraction at interfaces, waveguides, steady-state and transient half space problems, and scattering of waves by cracks. *Instructor: Angel*

MECH 511(S) CONTINUUM MECHANICS I (3-0-3)

Exploration of concepts and general principles common to all branches of solid and fluid mechanics. Includes non-Newtonian fluid mechanics and nonlinear elasticity. Not offered every year. *Instructor: Angel*

MECH 513(F) THEORY OF ELASTICITY (3-0-3)

Discussion of advanced topics in the linear and nonlinear theory of elasticity. Also offered as CIVI 513. Not offered every year. *Instructor: Wang*

MECH 515(S) STRUCTURAL PLASTICITY, FATIGUE, AND FRACTURE (3-0-3)

Investigation of problems in limit analysis and design, the plastic behavior of structures, the flexure and torsion of prismatic members, fatigue failure, and the brittle fracture of structural components. Also offered as CIVI 515. Not offered every year. *Instructor: Merwin*

MECH 517(S) FINITE ELEMENT METHODS (3-0-3)

Introduction to finite element analysis with applications to problems in fluid and solid mechanics. *Instructor: Akin*

MECH 521(S) FLIGHT MECHANICS I (3-0-3)

Introduction to the performance, stability, and control of flight vehicles. Not offered every year.

MECH 523(S) PROBABILISTIC STRUCTURAL DYNAMICS (3-0-3)

Introduction to probability theory and random processes. Includes the dynamic analysis of linear and nonlinear structural systems subjected to stationary and nonstationary random excitations, reliability studies related to first excursion and fatigue failures, and applications to earthquake engineering, offshore engineering, and wind engineering. Prerequisites: MECH 412 or CIVI 521 and basic knowledge of probability theory. Also offered as CIVI 523. *Instructor: Conte*

MECH 530 HEAT EXCHANGER DESIGN (3-0-3)

Introduction to fundamentals of the thermal design of heat exchangers. Includes the design of a heat exchanger for a specified application. Not offered every year. *Instructor: Bayazitoglu*

MECH 538(F) EXPERT SYSTEMS APPLIED TO ROBOTICS (3-0-3)

Introduction to expert systems and fuzzy logic control. Includes robotics and automation. Not offered every year.

MECH 563(F) ENGINEERING APPROACH TO MATHEMATICAL PROGRAMMING (3-0-3)

Study of the minimization of functions of variables that are either unconstrained, subject to equality constraints, subject to inequality constraints, or subject to both equality and inequality constraints. Includes analytical and computational methods. Also offered as CAAM 563. *Instructor: Miele*

MECH 564(S) ENGINEERING APPROACH TO OPTIMAL CONTROL (3-0-3)

Study of optimal control theory and calculus of variations. Includes minimization of functionals depending on variables subject to differential constraints, nondifferential constraints, initial constraints, and final constraints, as well as analytical and computational methods. Also offered as CAAM 564. *Instructor: Miele*

MECH 580(S) MECHANICAL MODELING AND ANALYSIS OF PHYSIOLOGICAL AND BIOLOGICAL SYSTEMS (3-0-3)

Survey of existing mathematical models for physiological systems. Includes bone remodeling around orthopedic devices, circulatory mechanics, and models for immune response, reaction-diffusion systems, and others. Not offered every year. *Instructor: Harrigan*

MECH 585(S) BIOMECHANICS OF HUMAN MOVEMENT (3-0-3)

Graduate version of MECH 485. Term project required. *Instructor: Ambrose*

MECH 591(F) GAS DYNAMICS (3-0-3)

Study of the fundamentals of compressible, one-dimensional gas flows with area change, normal shocks, friction, and heat addition. Includes oblique shocks, Prandtl-Meyer flows expansions, and numerical techniques. Prerequisite: MECH 371. *Instructor: Meade*

MECH 593 MECHANICAL ENGINEERING PROBLEMS (variable)

Approved investigation or design project under the direction of a member of the staff. Open only to mechanical engineering students.

MECH 594(F) AN INTRODUCTION TO AERODYNAMICS (3-0-3)

Development of theories for the prediction of aerodynamic forces and moments acting on airfoils, wings, and bodies. Includes their design applications. Not offered every year.

MECH 601-605 SPECIAL TOPICS (hours variable)

Instructors: Akin, Bayazitoglu, Miele

MECH 606 GRADUATE SEMINAR (0 hours credit)

Instructor: Bayazitoglu

MECH 673(S) ADVANCED FLUID MECHANICS I (3-0-3)

Examination of conservation equations for viscous compressible fluids. Includes applications to viscous and inviscid flows, as well as simple flows of non-Newtonian fluids. *Instructor: Meade*

MECH 674 ADVANCED FLUID MECHANICS II (3-0-3)

Continuation of MECH 673. Not offered every year.

MECH 676(F) COMPUTATIONAL FLUID MECHANICS (3-0-3)

Study of numerical methods for the solution of the equations of fluid mechanics. Includes finite element and difference schemes, accuracy, and stability considerations. Prerequisite: MECH 673.

Instructor: Collis

MECH 678(F) ADVANCED STOCHASTIC MECHANICS (3-0-3)

Presentation of nonlinear random vibrations, statistical linearization, ARMA filters modeling, Monte Carlo simulation, Wiener-Volterra series, time-vibrant structural reliability, and stochastic finite elements, with emphasis on their usefulness to aerospace, civil, marine, and mechanical applications. Prerequisite: CIVI 512, 523, or MECH 523. Also offered as CIVI 678. *Instructor: Spanos*

MECH 682(S) CONVECTIVE HEAT TRANSFER (3-0-3)

Rigorous study of the transfer of heat by free and forced convection. Not offered every year.

Instructor: Bayazitoglu

MECH 683(F) RADIATIVE HEAT TRANSFER I (3-0-3)

Rigorous study of the transfer of heat by radiant exchange in the absence of absorbing media. Not offered every year. *Instructor: Bayazitoglu*

MECH 684(S) RADIATIVE HEAT TRANSFER II (3-0-3)

Study of radiative transfer in the presence of absorbing, emitting, and scattering media. Includes combined radiation, conduction, and convection, as well as heat transfer in furnaces, fire propagation, and air pollution problems. Not offered every year. *Instructor: Bayazitoglu*

MECH 698(S) ADVANCED TOPICS IN ROBOTICS (3-0-3)

Review of conventional robotics control, artificial neural networks for modeling, fuzzy logic control, neurofuzzy modeling and control, genetic algorithms, and genetic programming applications in robotics. Also offered as ELEC 698. Not offered every year.

MECH 699(S) ADVANCED ROBOTICS LABORATORY (0-3-1)

Not offered every year.

MECH 800 RESEARCH AND THESIS (hours variable)

Military Science (MILI)

Military Science Department/University of Houston

MILI 106 RANGER CHALLENGE TRAINING (0-3-1)

Development of skills through physically demanding team competition. Includes land navigation, rifle marksmanship, tactics, and the assembly of a one-rope bridge, as well as physical training Monday through Friday. Selected cadets compete against teams from other universities. Open only to Army ROTC cadets.

MILI 109 PHYSICAL FITNESS TRAINING (0-3-1)

MILI 121(F) INTRODUCTION TO THE ARMY AND MARKSMANSHIP (1-2-1)

Introduction to the role, function, and purpose of the armed forces in society, with emphasis on safety, responsibility, and marksmanship techniques. Open to all students. May attend without military obligation. Corequisite: MILI 123.

MILI 122(S) SURVIVAL AND UNARMED SELF-DEFENSE (1-2-1)

Study of basic concepts in wilderness survival and basic holds and movement, with emphasis on field expedient techniques and basic fieldcraft. Includes techniques to defend against an attacker, as well as rape prevention tactics. Open to all students. May attend without military obligation. Corequisite: MILI 123.

MILI 123 LEADERSHIP LABORATORY (0-2-0)

Corequisite: MILI 121 (fall); and 122 (spring).

MILI 201(F) MILITARY LEADERSHIP DEVELOPMENT (2-2-2)

Exploration of the characteristics of leadership. Includes problem analysis, decision making, oral presentations, first aid, small unit tactics, land navigation, basic radio communication, marksmanship, and rappelling. May attend without military obligation. Corequisite: MILI 203.

MILI 202(S) MILITARY LEADERSHIP DEVELOPMENT (2-2-2)

Continuation of MILI 201. Prerequisite: MILI 201. Corequisite: MILI 203.

MILI 203 LEADERSHIP LABORATORY (0-2-0)

Corequisite: MILI 201 (fall) and 202 (spring).

MILI 301(F) ADVANCED MILITARY SCIENCE (3-2-3)

Instruction in leadership, the preparation of combat orders, principles of military instruction, small unit tactics, and tactical communications, with emphasis on preparing students for advanced camp. Includes lab and physical fitness training. Prerequisite: MILI 202 or permission of department chair. Corequisite: MILI 304.

MILI 302(S) LEADERSHIP DEVELOPMENT (3-2-3)

Continuation of MILI 301. Prerequisite: MILI 301. Corequisite: MILI 304.

MILI 304 LEADERSHIP LABORATORY (0-2-0)

Corequisite: MILI 301 (fall) and 302 (spring).

MILI 401(F) ADVANCED MILITARY SCIENCE (3-2-3)

Study of leadership and command, military law, administrative/staff operations and procedures, the dynamics of the military team, training management, ethics, and professionalism. Includes ab and physical fitness training. Prerequisite: MILI 302 or permission of department chair. Corequisite: MILI 403.

MILI 402(S) ADVANCED MILITARY SCIENCE (3-2-3)

Continuation of MILI 401. Prerequisites: MILI 302 and 401 or permission of department chair
Corequisite: MILI 403.

MILI 403 LEADERSHIP LABORATORY (0-2-0)

Corequisite: MILI 401 (fall); and 402 (spring).

Materials Science and Engineering (MSCI)

The George R. Brown School of Engineering/Department of Mechanical Engineering and Materials Science

MSCI 301 MATERIALS SCIENCE (3-0-3)

DISTRIBUTION COURSE: GROUP III

Introduction to the science of solid materials. Includes metals, ceramics, plastics, and semiconductors, as well as the properties of solid materials from atomic and macroscopic points of view. Required for mechanical engineering and materials science and engineering majors. Prerequisite: MATH 101. *Instructors: Brotzen, Pharr*

MSCI 303(S) MATERIALS SCIENCE JUNIOR LAB (0-3-1)

Selected lab experiments in materials science. Open only to materials science and engineering majors. Required for materials science and engineering majors. *Instructor: Barrera*

MSCI 304(F) APPLIED MATERIALS ENGINEERING (0-3-1)

Practical application of the basic principles of materials science. Includes case studies of failure under a variety of conditions, as well as topics in the fabrication selection and heat treatment of materials. Co-/Prerequisite: MSCI 301. *Instructor: Cunningham*

MSCI 311(F) INTRODUCTION TO DESIGN (1-9-4)

Introduction to fundamental aspects of design through semester-long group projects. Open to nonmajors only with permission of instructor. Required for materials science and engineering majors. Prerequisite: MSCI 301. *Instructor: Barrera*

MSCI 401(F) THERMODYNAMICS AND TRANSPORT PHENOMENA IN MATERIALS SCIENCE (4-0-4)

Unified presentation of the kinetics and thermodynamics of mass and energy transport. Includes heterogeneous equilibrium, diffusion in solids, and heat transfer, as well as their application to engineering design. Required for materials science and engineering majors. *Instructor: McLella*

MSCI 402(F) MECHANICAL PROPERTIES OF MATERIALS (3-0-3)

Survey of the mechanical properties of solid materials. Includes basic mechanics, elasticity, plasticity, fracture, fatigue, creep, hardening mechanisms, mechanical testing, and structure-property relationships. Required for materials science and engineering majors. Prerequisite: MSC 301. *Instructors: Barrera, Pharr*

MSCI 404(S) MATERIALS ENGINEERING AND DESIGN (2-6-4)

Exploration of technological aspects of materials selection, design, failure, and analysis. Lab time spent in an industrial setting. Open to nonmajors only with permission of instructor. Required for materials science and engineering majors. *Instructor: Cunningham*

MSCI 406(S) PHYSICAL PROPERTIES OF SOLIDS (3-0-3)

Survey of the electrical, magnetic, and optical properties of metals, semiconductors, and dielectrics based upon elementary band theory concepts. Required for materials science and engineering majors. Prerequisite: MATH 211. Not offered every year. *Instructor: Lairson*

MSCI 411(S) METALLOGRAPHY AND PHASE RELATIONS (3-0-3)

Study of microstructures that may be observed in metals and alloys, optical metallography (in addition to more sophisticated techniques), and the relationships between structural properties and failures. Required for materials science and engineering majors. Prerequisite: MSCI 301. *Instructor: McLellan*

MSCI 415(S) CERAMICS AND GLASSES (3-0-3)

Survey of the fundamentals of ceramic and glassy materials. Includes phase relations, structure, bonding, processing, and mechanical properties, as well as the use of ceramics and glasses in engineering design. Required for materials science and engineering majors. Prerequisite: MSCI 301. Not offered every year.

MSCI 500 MATERIALS SCIENCE SEMINAR (0 hours credit)

Biweekly seminars on selected topics in materials science. Required for materials science and engineering majors. *Instructors: Barrera, Pharr*

MSCI 501 MATERIALS SCIENCE SEMINAR (1-0-1)

See MSCI 500. Required for materials science and engineering majors. *Instructors: Barrera, Pharr*

MSCI 523(S) PROPERTIES, SYNTHESIS, AND DESIGN OF COMPOSITE MATERIALS (3-0-3)

Study of the science of interfaces and the properties that govern their use in composite materials. Not offered every year. *Instructor: Barrera*

MSCI 535(F) CRYSTALLOGRAPHY AND DIFFRACTION (3-0-3)

Study of crystals by x-ray and electron diffraction and electron microscopy. Includes basic diffraction theory and methods for the characterization of structure and the constitution of materials. Required for materials science and engineering majors. Prerequisite: MSCI 301. *Instructor: Lairson*

MSCI 537(F) MATERIALS SCIENCE SENIOR LAB (0-3-1)

Selected lab experiments in materials science. Required for materials science and engineering majors. Prerequisite: MSCI 303. *Instructor: Lairson*

MSCI 541(S) PHYSICAL METALLURGY (3-0-3)

Survey of the fundamentals of solidification, alloying, and heat treatment. Includes the mechanical and nonmechanical properties of metallic systems from atomic and electronic theory. Prerequisite: MSCI 301. Not offered every year.

MSCI 550(S) TIME-DEPENDENT PLASTICITY (3-0-3)

Survey of fundamental concepts in creep and creep rupture in solids. Includes a phenomenological overview and presentation of mechanistic theories. Prerequisite: MSCI 402 or permission of instructor. Not offered every year.

MSCI 561(F) ADVANCED LAB I (0-4-1)

Research and design in the field of materials and metallurgy. Prerequisite: permission of instructor.

MSCI 562(S) ADVANCED LAB II (0-4-1)

Continuation of MSCI 561. Prerequisite: permission of instructor.

MSCI 569(S) CORROSION SCIENCE AND ENGINEERING (3-0-3)

Survey of the principles and theories of corrosion, corrosion testing, and the selection of materials for corrosion prevention. Prerequisite: MSCI 301. Not offered every year. *Instructor: Cunningham*

MSCI 570(F) SENIOR DESIGN THESIS PROJECT (2-0-2 each semester)**MSCI 571(S)**

A design project in the materials science field will be undertaken by the student in close collaboration with at least one materials science faculty member.

MSCI 593(F) POLYMER SCIENCE AND ENGINEERING (3-0-3)

Basic concepts in macromolecular chemistry and their application in the synthesis and chemical modification of polymers. Prerequisites: CHEM 211-212. Also offered as CENG 593. *Instructor: Armeniades*

MSCI 594(S) PROPERTIES OF POLYMERS (3-0-3)

Study of the molecular organization and physical properties of polymeric materials. Includes elastomeric, semicrystalline, and glassy polymers, as well as the processing and technology of polymeric systems. Also offered as CENG 594. *Instructor: Armeniades*

MSCI 609(S) FRACTURE MECHANICS (3-0-3)

Study of the theory of elasticity and plasticity pertinent to fracture. Includes practical aspects of fracture toughness testing. Not offered every year. *Instructor: Pharr*

MSCI 610(F) CRYSTAL THERMODYNAMICS (3-0-3)

Discussion of potentials and third-order elastic constants. Includes the lattice dynamics of harmonic phonons and anharmonic perturbation expansion, as well as the contribution of electrons to the thermodynamic quantities. Not offered every year. *Instructor: Brotzen*

MSCI 614/615 SPECIAL TOPICS (hours variable)**MSCI 623(F) ANALYTICAL SPECTROSCOPIES: TOOLS IN MATERIALS SCIENCE (3-0-3)**

Exploration of concepts in vacuum technology, thin film metallization, x-ray photoelectron spectroscopy, Auger electron spectroscopy, and x-ray absorption fine structure. Includes lab sessions on XPS and EXAFS analysis. Prerequisites: MSCI 402 and 535 (or equivalent). Not offered every year. *Instructor: Barrera*

MSCI 634(F) THERMODYNAMICS OF ALLOYS (3-0-3)

Examination of relations between classical thermodynamics and statistical mechanics as applied to an understanding of solid and liquid alloys. Includes solid-solid, liquid-solid, and gas-solid equilibria in metallurgy. Not offered every year. *Instructor: McLellan*

MSCI 635(S) TRANSFORMATION IN ALLOYS (3-0-3)

Study of diffusion in metals and alloys. Includes the mechanism and phenomenology of diffusion-controlled transformations, precipitation from saturated alloys and liquid solutions, and transformations in heat-treated alloys. Not offered every year. *Instructor: McLellan*

MSCI 645(S) THIN FILMS (3-0-3)

Exploration of materials issues relevant to thin films. Includes techniques for vapor phase deposition of thin films (e.g., evaporation, sputtering, and chemical vapor deposition), epitaxy, generation of thin film defects, strain, growth anisotropy, and grain structure, as well as electrical, optical, and magnetic properties of thin film materials and structures. Also offered as ELEC 645. Not offered every year. *Instructor: Lairson*

MSCI 666(S) CONDUCTION PHENOMENA IN SOLIDS (3-0-3)

Survey of fundamental aspects of electron and energy transport in conductors, semiconductors, and insulators. Prerequisite: MSCI 406 (or equivalent). Not offered every year. *Instructor: Brotzen*

Music (MUSI)

The Shepherd School of Music

Note that courses are listed by section according to content.

COMPOSITION

MUSI 303 UNDERGRADUATE COMPOSITION SEMINAR (hours variable)

Instructors: Applebaum, Gottschalk, Jalbert, Lavenda, Milburn

MUSI 305 COMPOSITION ELECTIVE (3-0-3)

MUSI 307 COMPOSITION FOR NONMAJORS I AND II (3-0-3) DISTRIBUTION COURSE: GROUP I

MUSI 401 COMPOSITION FOR MAJORS (3-0-3)

Creative composition using 20th-century vocabularies supported by extensive performance, listening, and analysis of related scores. Prerequisite: permission of instructor. *Instructors: Applebaum, Gottschalk, Jalbert, Lavenda, Milburn*

MUSI 444(S) PRACTICUM IN CONTEMPORARY MUSIC PERFORMANCE (1 hour credit)

Composition of a piece for an ensemble formed from enrolled performers who rehearse and coach the piece as the enrolled composer writes it and who perform it on various recitals. Open to music majors only. *Instructors: Lavenda, Milburn*

MUSI 503(F) ELECTRONIC MUSIC COMPOSITION (1-6-3)

Introduction to computer-controlled M.I.D.I. sound synthesis systems. Includes sequencing, multitrack tape recording, and outboard sound and signal processing. *Instructor: Gottschalk*

MUSI 504(S) COMPUTER-ASSISTED MUSIC COMPOSITION (1-6-3)

Continuation of MUSI 503. Prerequisite: MUSI 503. *Instructor: Gottschalk*

MUSI 505 ADVANCED ELECTRONIC AND COMPUTER MUSIC COMPOSITION (1-6-3)

Prerequisite: MUSI 504.

MUSI 601 COMPOSITION FOR MAJORS—ADVANCED AND GRADUATE STUDENTS (3-0-3)

Instructors: Applebaum, Gottschalk, Jalbert, Lavenda, Milburn

MUSI 603 GRADUATE COMPOSITION SEMINAR (hours variable)

Instructors: Applebaum, Gottschalk, Jalbert, Lavenda, Milburn

MUSI 605 ADVANCED ELECTRONIC AND COMPUTER MUSIC COMPOSITION II (3-0-3)

Instructor: Gottschalk

MUSI 707 DOCTORAL INDEPENDENT STUDY IN COMPOSITION (3-0-3)

Composition of professional-level major symphonic or symphonic/choral work.

II. THEORY**MUSI 117 FUNDAMENTALS OF MUSIC I (3-0-3)****DISTRIBUTION COURSE: GROUP I**

Instruction in the rudiments of pitch and duration, as well as study of scales, chord structure, tonality, and forms. For nonmusic majors with minimal music preparation. Prerequisite: permission of instructor.

MUSI 118(S) FUNDAMENTALS OF MUSIC II (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Application of MUSI 117 materials. Includes creative work using 20th-century art and popular vocabulary. Prerequisite: permission of instructor. Not offered every year.

MUSI 211(F) THEORETICAL STUDIES I (3-0-3)

Preliminary study of harmony, melody, rhythm, and form. Open to music majors only. Required for music majors. *Instructor: Lavenda*

MUSI 212(S) THEORETICAL STUDIES II (3-0-3)

Discussion, analysis, and creative application of theoretical concepts and vocabulary from 1800 to the present. Open to music majors only. Required for music majors. *Instructor: Lavenda*

MUSI 311(F) THEORETICAL STUDIES III (3-0-3)

Study of baroque and early classical music. Includes species counterpoint and two-, three-, and four-voice tonal counterpoint, as well as analysis of representative compositions of diverse genre and medium. Open to music majors only. Required for music majors. *Instructor: Jalbert*

MUSI 312(S) THEORETICAL STUDIES IV (3-0-3)

Study of late classical and Romantic music. Includes chromatic harmony, analysis of selected major works, and introduction to both linear reductive analysis and orchestration. Open to music majors only. Required for music majors. *Instructor: Jalbert*

MUSI 317(F) THEORY FOR NONMAJORS I (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Discussion, analysis, and application of the parameters of music. Includes melody, rhythm, harmony, counterpoint, instrumentation, and form. For nonmusic majors with appreciable instrumental and/or high school theory background. Prerequisite: permission of instructor. *Instructor: Lavenda*

MUSI 318(S) THEORY FOR NONMAJORS II (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of stylistic harmony, melody, and form from 1700 to the present. For nonmusic majors with appreciable instrumental and/or high school theory background. Prerequisite: MUSI 317 or permission of instructor. *Instructor: Lavenda*

MUSI 405(S) MUSIC BUSINESS AND LAW (3-0-3)

This course is intended to enable the student to view their work within the larger context of the business of music and to allow the student more latitude and awareness in determining a career path. Intended for music composition majors but of interest to others as well. *Instructor: Gottschalk*

MUSI 411(F) THEORETICAL STUDIES V (3-0-3)

Study of music of the 20th century. Includes compositional devices from 1900 to the present, as well as analysis of selected major works. Required for music majors. *Instructors: Jalbert, Milburn*

MUSI 412(S) THEORETICAL STUDIES VI (3-0-3)

Study of advanced analytical techniques. Includes practical applications of principal analytical systems from the Middle Ages to the present. *Instructor: Applebaum*

MUSI 417 MUSIC FOR FILM (3-0-3)

Exploration of instances where music has made a decisive impact on the meaning and vitality of various films. Includes an examination of the generalized functions of film music (e.g., pacing, characterization, psychological extension, and structural delineation) with reference to dramatic intent. No prior technical knowledge of either medium required, though some background in film or music preferred. *Instructor: Gottschalk*

MUSI 511(F) GRADUATE THEORY REVIEW (2-0-2)**MUSI 513(F) MODAL COUNTERPOINT (2-0-3)**

In-depth examination of the vocal polyphony of the 16th century. Includes practical applications of contrapuntal techniques. *Instructor: Gottschalk*

MUSI 515(F) ADVANCED ORCHESTRATION I AND**MUSI 516(S) II (3 hours credit each)**

Instructors: Applebaum, Milburn

MUSI 517(F) SPECIAL STUDIES—MUSIC THEORY ANALYTICAL SYSTEMS (3-0-3)**MUSI 611(F) PEDAGOGY OF THEORY I AND II (3-0-3 each semester)****MUSI 612(S)**

Study of principal learning theories and philosophies of learning and teaching. Includes examination and critique of college-level materials. *Instructor: Lavenda*

MUSI 613(S) CANON AND FUGUE (2-0-3)

Specialized study of imitative counterpoint. Includes examples from the 15th to the 20th centuries, with emphasis on the baroque fugue and 20th-century polyphony. *Instructor: Milburn*

MUSI 614 SELECTED STUDIES IN MUSIC THEORY (3-0-3)

Advanced study of the music of a single composer.

MUSI 711(F) ANALYTICAL APPROACHES (3 hours credit)

Examination of critical passages from a chosen work, with specific reference to points of view in the writings of Schenker, Forte, Babbitt, and Cone. *Instructor: Applebaum*

MUSI 712(S) SEMINAR IN ADVANCED ANALYSIS (3 hours credit)**MUSI 715(F) HISTORY OF THEORY (3-0-3)**

Not offered every year.

III. HISTORY AND LITERATURE**MUSI 221(F) HISTORICAL STUDIES I (3-0-3)**

Introduction to the historical study of musical style. Required for music majors. *Instructors: Citron, Meconi*

MUSI 222(S) HISTORICAL STUDIES II (3-0-3)

Historical study of musical style. Includes medieval and Renaissance music. Required for music majors. *Instructor: Meconi*

MUSI 321(F) HISTORICAL STUDIES III (3-0-3)

Historical study of music of the 17th and 18th centuries, Baroque and pre-classical music. Correlates with MUSI 311 and 331. Required for music majors. *Instructor: Schnoebelen*

MUSI 322(S) HISTORICAL STUDIES IV (3-0-3)

Historical study of music of the 18th and 19th centuries. Includes classical and Romantic music. Correlates with MUSI 312 and 332. Required for music majors. *Instructor: Citron*

MUSI 325 BAROQUE STRING/CONTINUO PERFORMANCE (hours variable)

Exploration of theoretical and pragmatic approaches to baroque music performance problems for string and continuo players. Includes discussion of research from treatises on various topics and their application to the instruments in extensive performance workshops. Prerequisite: audition. Not offered every year.

MUSI 327(F) MUSIC LITERATURE FOR NONMAJORS I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Historical survey of music from the Middle Ages to 1750. Offered every other year. *Instructor: Bailey*

MUSI 328(S) MUSIC LITERATURE FOR NONMAJORS II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Historical survey of music from 1750 to the present. Offered every other year. *Instructor: Bailey*

MUSI 329 SPECIAL STUDIES-MUSIC HISTORY (3-0-3)

Special studies in music history. Not offered every year.

MUSI 414 PIANO CHAMBER MUSIC LITERATURE (3 hours credit)

Not offered every year. *Instructor: Connelly*

MUSI 421(F) HISTORICAL STUDIES V (3-0-3)

Historical study of music of the 20th century. Correlates with MUSI 411 and 431. Required for music majors. *Instructor: Bailey*

MUSI 422 RENAISSANCE MUSIC (3-0-3)

Instructor: Meconi

MUSI 423(F) CHAMBER MUSIC LITERATURE (3-0-3)

Not offered every year.

MUSI 424(F) ORGAN LITERATURE I AND II (3-0-3 each semester)**MUSI 425(S)**

Instructor: Holloway

MUSI 426(F) PIANO LITERATURE (3-0-3)

Not offered every year. *Instructor: Fischer*

MUSI 427(F) ORGAN LITERATURE III AND IV (3-0-3 each semester)**MUSI 428(S)**

Not offered every year. *Instructor: Holloway*

MUSI 429 MUSIC OF THE MIDDLE AGES (3-0-3)

Instructor: Meconi

MUSI 521 GRADUATE REVIEW OF EARLY MUSIC (0 hours credit)

Instructor: Meconi

MUSI 523(S) BIBLIOGRAPHY AND RESEARCH METHODS I (3-0-3)

Study of bibliography methods and techniques in research methodology. *Instructor: Schnoebelen*

MUSI 524 SURVEY OF OPERA (3-0-3)

Survey of historical, musical, and literary aspects of selected operas. Prerequisite: permission of instructor. Not offered every year. *Instructor: Schnoebelen*

MUSI 525 PERFORMANCE PRACTICES SEMINAR (3-0-3)

Study of performance practices from treatises and music. Includes problems in editing music. Not offered every year. *Instructor: Schnoebelen*

MUSI 621 SELECTED STUDIES IN MUSIC HISTORY (3-0-3)

Seminar on individual topics in music history. Content varies from year to year. Prerequisites: MUSI 411 and 421. *Instructors: Bailey, Citron, Meconi, Schnoebelen*

MUSI 624 SEMINAR ON A SELECTED COMPOSER (3-0-3)

Advanced study of the music of a single composer. Prerequisites: MUSI 411 and 421.

MUSI 723 AESTHETICS OF MUSIC (3-0-3)

Introduction to music aesthetics, with emphasis on contemporary theories and writings. Not offered every year. *Instructor: Lavenda*

MUSI 725 NOTATION (3-0-3)

Prerequisite: permission of instructor. Not offered every year.

IV. AURAL SKILLS**MUSI 231(F) AURAL SKILLS AND PERFORMANCE****MUSI 232(S) TECHNIQUES I AND II (3-0-2 each semester)**

Instruction in ear training and sight singing (e.g., solfege, rhythmic studies, intervals, and chords), with emphasis on diatonic music. Pre-enrollment placement test required. Must take aural skills classes in sequence. Required for music majors.

MUSI 331(F) AURAL SKILLS AND PERFORMANCE**MUSI 332(S) TECHNIQUES III AND IV (3-0-2 each semester)**

Continuation of MUSI 232, with emphasis on chromatic music. Required for music majors except those in B.A. program. *Instructors: Gottschalk, Jalbert*

MUSI 431(F) AURAL SKILLS AND PERFORMANCE**TECHNIQUES V (3-0-2)**

Continued instruction in performance techniques. Includes literature of the 20th century. Required for music majors except those in B.A. program.

MUSI 432(S) AURAL SKILLS AND PERFORMANCE**TECHNIQUES VI (3 hours credit)**

Instruction in score reading.

MUSI 437(F) GRADUATE EAR TRAINING REVIEW (3-0-2)

Not offered every year.

V. CONDUCTING**MUSI 433(S) SCORE READING (2-2-2)****MUSI 434(F) ELEMENTS OF CONDUCTING (2-0-2)**

Not offered every year.

MUSI 439(F) CHORAL CONDUCTING I (3-0-3)

Development of the fundamental skills of choral conducting. Includes baton techniques, score reading, and rehearsal procedures, using conducting materials selected from representative choral works. Not offered every year. *Instructor: Jaber*

MUSI 440(S) CHORAL CONDUCTING II (3-0-3)

Study of advanced techniques of choral conducting, with emphasis on expressive gestures and phrasal conducting, interpretation and chironomy of chant, recitative conducting, repertoire selection, score preparation, and conducting of choral-instrumental works. Not offered every year. *Instructor: Jaber*

MUSI 533 GRADUATE CONDUCTING SEMINAR (4-0-1)

Open only to orchestral conducting majors with graduate standing. *Instructor: Rachleff*

MUSI 630 GRADUATE CHORAL CONDUCTING SEMINAR (3-0-3)

Instructor: Jaber

MUSI 637 ADVANCED CONDUCTING FOR MAJORS (3-9-3)

Open only to orchestral conducting majors with graduate standing. *Instructor: Rachleff*

VI. INDIVIDUAL INSTRUCTION

Course numbers for music courses involving individual instruction have the following coded values:

First digit—curricular function: 1 = study by nonmusic majors; 2 = study by music majors on an instrument other than their principal instrument; 3 = study by composition, music history, theory, or conducting majors on their principal instrument; 4 = study by performance majors before qualifying exams (four-year undergraduates and five-year students); 6 = study by performance majors after qualifying exams (two-year graduate students and five-year students)

Second digit—instrument family

Third digit—particular instrument within the family

1. Woodwind Instruction*Flute Courses*

MUSI 151 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 251** (1-5-2); **MUSI 351** (1-5-2); **MUSI 352** (1-25-3); **MUSI 451** (1-25-3); **MUSI 651** (1-25-3)

Instructor: Buyse

Oboe Courses

MUSI 153 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 253** (1-5-2); **MUSI 353** (1-5-2); **MUSI 354** (1-25-3); **MUSI 453** (1-25-3); **MUSI 653** (1-25-3)

Instructor: Atherholt

Clarinet Courses

MUSI 155 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 255** (1-5-2); **MUSI 355** (1-5-2); **MUSI 356** (1-25-3); **MUSI 455** (1-25-3); **MUSI 655** (1-25-3)

Instructor: Peck

assoon Courses

MUSI 157 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 257** (1-5-2); **MUSI 357** (1-5-2); **MUSI 358** (1-25-3); **MUSI 457** (1-25-3); **MUSI 656** (1-25-3)

structor: Kamins

ther Woodwind Courses

MUSI 459 **THEORY OF WOODWIND PERFORMANCE TECHNIQUES** (1-3-1)

or nonwoodwind students. Not offered every year.

MUSI 559 **WOODWIND PEDAGOGY** (1-3-2)

ot offered every year.

*Brass Instruction**orn Courses*

MUSI 161 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 261** (1-5-2); **MUSI 361** (1-5-2); **MUSI 362** (1-25-3); **MUSI 461** (1-25-3); **MUSI 661** (1-25-3)

structor: Ver Meulen

trumpet Courses

MUSI 163 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 263** (1-5-2); **MUSI 363** (1-5-2); **MUSI 364** (1-25-3); **MUSI 463** (1-25-3); **MUSI 663** (1-25-3)

structors: Ghitalla, Wilt

rombone Courses

MUSI 165 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 265** (1-5-2); **MUSI 365** (1-5-2); **MUSI 366** (1-25-3); **MUSI 465** (1-25-3); **MUSI 665** (1-25-3)

structor: Waters

iuba Courses

MUSI 167 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 267** (1-5-2); **MUSI 367** (1-5-2); **MUSI 368** (1-25-3); **MUSI 467** (1-25-3); **MUSI 667** (1-25-3)

structor: Kirk

Other Brass Courses

MUSI 469 **THEORY OF BRASS PERFORMANCE TECHNIQUES** (1-3-1)

or nonbrass students. Not offered every year.

MUSI 569 **BRASS PEDAGOGY** (1-3-2)

ot offered every year.

Percussion Courses

MUSI 171 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 271** (1-5-2); **MUSI 371** (1-5-2); **MUSI 372** (1-25-3); **MUSI 471** (1-25-3); **MUSI 671** (1-25-3)

Instructor: Brown

Other Percussion Courses

MUSI 479(S) **THEORY OF PERCUSSION PERFORMANCE TECHNIQUES** (1-3-1)

For nonpercussion students. Not offered every year. *Instructor: Brown*

MUSI 579 **PERCUSSION PEDAGOGY** (1-3-2)

Not offered every year. *Instructor: Brown*

3. Voice Instruction

MUSI 173 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 273** (1-5-2); **MUSI 373** (1-5-2); **MUSI 374** (1-25-3); **MUSI 473** (1-25-3); **MUSI 673** (1-25-3)

Instructors: Farwell, Jaber, A., Murray

Other Voice Courses

MUSI 474 **OPERA THEATER WORKSHOP** (1 hour credit)

Study of operatic techniques for the singer/actor. Includes the cultivation of free, expressive, and significant movement on stage and the development of musical, dramatic, and muscular sensitivity, as well as participation, according to ability, in scenes, recitals, and major productions.

MUSI 549 **VOICE PEDAGOGY** (1-3-2)

Offered alternate years. For juniors, seniors, and graduate students.

MUSI 571 **VOCAL COACHING** (1 hour credit)

Instructor: de Chambrier, Jaber

MUSI 573(F) **DICTION I: ITALIAN** (2-1-1)

MUSI 574(F) **DICTION II: GERMAN** (2-1-1)

MUSI 575(F) **VOICE REPERTOIRE I AND II** (1-3-2)

MUSI 577(S) **DICTION III: ENGLISH** (2-1-1)

MUSI 578(S) **DICTION IV: FRENCH** (2-1-1)

4. Keyboard and Harp Instruction*Piano Courses*

MUSI 181 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 281** (1-5-2); **MUSI 381** (1-5-2); **MUSI 382** (1-25-3); **MUSI 481** (1-25-3); **MUSI 681** (1-25-3)

Instructors: Connelly, Fischer, Perry, Roux, Shank

Organ Courses

MUSI 183 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 283** (1-5-2); **MUSI 383** (1-5-2); **MUSI 384** (1-25-3); **MUSI 483** (1-25-3); **MUSI 683** (1-25-3)

Instructor: Holloway

Harpsichord Courses

MUSI 185 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 285** (1-5-2); **MUSI 385** (1-5-2); **MUSI 386** (1-25-3)

Prerequisite: permission of instructor. Not offered every year. *Instructor: Holloway*

Harp Courses

MUSI 187 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 287** (1-5-2); **MUSI 387** (1-5-2); **MUSI 388** (1-25-3); **MUSI 487** (1-25-3); **MUSI 687** (1-25-3)

Instructor: Page

Other Keyboard Courses

MUSI 389 **COLLABORATIVE PIANO SKILLS** (2 hours credit)

Practicum exploring the pianist as an ensemble player. Includes three sessions each week: a performance class for pianists in partnership with instrumentalists and singers (e.g., balance, pedaling, articulation, and style), a private appointment with the instructor on the individual repertoire (e.g., songs, sonatas, and concerto reductions), and supervised sight reading in the four-hand and other duo literature. *Instructor: Fischer*

MUSI 445(F) **KEYBOARD PROFICIENCY I AND II** (2 hours credit each)

MUSI 446(S)

For organists. Not offered every year. *Instructor: Holloway*

MUSI 447(F) **INTRODUCTION TO PIANO TECHNOLOGY** (2 hours credit)

Introduction to the tuning and maintenance of pianos. Includes the theory and acoustics of tuning, a brief history of the piano, and a general exposure to restoration, as well as "hands-on" experience.

Instructor: Shank

MUSI 448(S) **PIANO TECHNOLOGY PRACTICUM FOR PIANISTS** (2 hours credit)

Practicum in the proper repair and replacement of sound-producing mechanisms. Includes supervised involvement in tuning and maintenance. *Instructor: Shank*

MUSI 545(F) **KEYBOARD PROFICIENCY III AND IV** (2 hours credit each)

MUSI 546(S)

For organists. Not offered every year. *Instructors: Holloway, Kloeckner*

MUSI 547(F) **ORGAN PEDAGOGY** (1-3-2)

Instructor: Holloway

MUSI 583 **INSTRUMENTAL ACCOMPANYING TECHNIQUES** (2 hours credit)

Development of practical skills for accompanying string and wind instruments in a wide repertoire. Includes sonatas, transcriptions, and orchestral reductions. For piano majors. Not offered every year. *Instructor: Connelly*

MUSI 584 VOCAL COACHING TECHNIQUES FOR PIANISTS (2 hours credit)

Development of skills for accompanying and coaching singers. Includes basic vocal production and terminology, *lieder*, opera, and oratorio. For piano majors. Not offered every year. *Instructor: Farwell*

MUSI 588(F) PIANO PEDAGOGY I (1-3-2)

Comprehensive survey of current methods of piano instruction, with emphasis on group instruction. Includes "hands-on" experience in operating an electronic keyboard lab and supervised student teaching. Offered alternate years. *Instructor: Shank*

MUSI 589(S) PIANO PEDAGOGY II (1-3-2)

Survey of the traditional private mode of teaching, with emphasis on contrasting methods and technical approaches. Includes supervised teaching. Offered alternate years. *Instructor: Shank*

MUSI 633(F) COMPREHENSIVE PRACTICUM IN PIANO TUNING (3 hours credit)

Complete restoration of a studio or performance piano under instructor supervision, with emphasis on restringing, installation of new action parts and dampers, and finish regulation, as well as voicing of the parts. *Instructor: Shank*

MUSI 645(S) ORGAN CONSTRUCTION (2 hours credit)

Not offered every year. *Instructor: Visser*

MUSI 686 APPLIED PIANO TECHNOLOGY (3 hours credit)

Comprehensive study in tuning all important historical and modern temperaments. Includes supervised work on action, voicing, regulation, and restoration. *Instructor: Shank*

MUSI 689 PIANO FOR CHAMBER MUSIC AND ACCOMPANYING MAJORS-ADVANCED AND GRADUATE STUDENTS (3 hours credit)

Instructor: Connelly

5. String Instruction*Violin Courses*

MUSI 191 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 291** (1-5-2); **MUSI 391** (1-5-2); **MUSI 392** (1-25-3); **MUSI 491** (1-25-3); **MUSI 691** (1-25-3)

Instructors: Fliegel, Goldsmith, Luca, Winkler

Viola Courses

MUSI 193 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 293** (1-5-2); **MUSI 393** (1-5-2); **MUSI 394** (1-25-3); **MUSI 493** (1-25-3); **MUSI 693** (1-25-3)

Instructors: Brooks, Katz

Violoncello Courses

MUSI 195 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 295** (1-5-2); **MUSI 395** (1-5-2); **MUSI 396** (1-25-3); **MUSI 495** (1-25-3); **MUSI 695** (1-25-3)

Instructors: Fischer, Hoebig, Katz

Double Bass Courses

MUSI 197 DISTRIBUTION COURSE: GROUP I (1-5-2); **MUSI 297** (1-5-2); **MUSI 397** (1-5-2); **MUSI 398** (1-25-3); **MUSI 497** (1-25-3); **MUSI 697** (1-25-3)
 Instructors: Ellison, Pitts

Other String Courses

MUSI 408 UNACCOMPANIED BACH PERFORMANCE CLASS (1 hour credit)

performances of J. S. Bach for one unaccompanied instrument with commentary on stylistic and historic aspects of the works. Includes student performance of versions in their original form or transcribed for the student's instrument when applicable. *Instructor: Luca*

MUSI 492(S) STRING TECHNOLOGY (2 hours credit)

Introduction and practicum in the maintenance and repair of string instruments. Not offered every year.

MUSI 499(F) THEORY OF STRING PERFORMANCE TECHNIQUES (1-3-1)

for nonstring students. Not offered every year.

MUSI 599 STRING PEDAGOGY (1-3-2)

Section 1, violin; section 2, viola; section 3, cello; and section 4, double bass. Not offered every year.

II. ENSEMBLES

MUSI 334 CAMPANILE ORCHESTRA (0-3-1)

MUSI 335 UNDERGRADUATE CHORUS (0-3-1)

Section 1, Shepherd Singers (by audition only); section 2, Rice Chorale; and section 3, Sallyport (by audition only). *Instructor: Jaber*

MUSI 337 UNDERGRADUATE ORCHESTRAS (0-9-2)

Instructor: Rachleff

MUSI 338 UNDERGRADUATE CHAMBER MUSIC (0-6-1)

MUSI 436 COLLEGIUM (1 hour credit)

MUSI 531 ORCHESTRAL REPERTOIRE (1-3-1)

Section 1, violin; section 2, viola; section 3, cello; section 4, double bass; section 5, woodwinds; section 6, brass; section 7, percussion ensemble; and section 8, harp. May be repeated for credit.

MUSI 635 ADVANCED ORCHESTRAS (0-9-2)

Instructor: Rachleff

MUSI 636 ADVANCED CHAMBER MUSIC (0-6-1)

MUSI 640 ADVANCED CHORUS (0-3-1)

Section 1, Shepherd Singers (by audition only); section 2, Rice Chorale; and section 3, Sallyport (by audition only). *Instructor: Jaber*

**MUSI 736 SOLO, CHAMBER, AND CONCERTO
REPERTOIRE (3 hours credit)**

Preparation of a wide range of repertoire as determined by the instructor.

MUSI 747 SURVEY OF ORCHESTRAL REPERTOIRE (2 hours credit)

Survey of the techniques of orchestral playing, with emphasis on preparation of orchestral excerpts for professional auditions.

VIII. APPLICABLE TO ALL SPECIALIZATIONS**MUSI 141 GUITAR FOR NONMAJORS (1-5-2)**

DISTRIBUTION COURSE: GROUP I

MUSI 341 JUNIOR RECITAL (0 hours credit)**MUSI 441 QUALIFYING RECITAL (0 hours credit)****MUSI 442 RECITAL ACCOMPANYING (0-2-1)**

Exercise in accompanying a single student recital. Includes preview, dress rehearsal, performance three lessons with the soloist's teacher, and practice times mutually agreeable to soloist and accompanist. May be repeated for credit.

MUSI 443 STUDIO ACCOMPANYING (0-4-1)

Exercise in accompanying private lessons in studios, as assigned, for a total of 4 hours each week. May be repeated for credit.

MUSI 449 UNDERGRADUATE INDEPENDENT STUDY (variable)**MUSI 641 ADVANCED OR SENIOR RECITAL (0 hours credit)****MUSI 642 ACCOMPANYING FOR ENSEMBLE CREDIT (0-4-1)**

May be taken in lieu of MUSI 335, 337, 635, or 640. Prerequisites: MUSI 442 or 443 and permission of both the student's major teacher and the conductor of the ensemble in which the student would normally perform.

**MUSI 647 MASTER'S THESIS IN COMPOSITION, THEORY, OR
HISTORY AND LITERATURE (1-0-3)****MUSI 649 GRADUATE INDEPENDENT STUDY (hours variable)****MUSI 700 GRADUATE RESEARCH (hours variable)**

Prerequisite: permission of director of graduate studies at the Shepherd School.

MUSI 741 GRADUATE RECITAL (0 hours credit)**MUSI 745 INSTRUMENTAL TECHNIQUES—
WOODWINDS (1 hour credit)**

Study of the relationships of the various instruments within a family. Includes technical problems often encountered in the repertoire and resolution of those problems.

MUSI 748 DOCTORAL RECITAL RESEARCH (hours variable)

Prerequisite: permission of director of graduate studies at the Shepherd School.

MUSI 749 APPRENTICESHIP (hours variable)

MUSI 750 DOCTORAL DOCUMENT (3 hours credit)

Supervised research and writing in areas of performance study. Not limited to areas of original research. Normally taken following completion of other course work, beginning the semester when comprehensive examinations are scheduled.

MUSI 751 DOCTORAL RECITAL (0 hours credit)

Section 1, solo; section 2, chamber; section 3, concerto; and section 4, lecture.

MUSI 800 DISSERTATION (3 hours credit)

IX. BAND

MUSI 340 CONCERT BAND (0-4-1)

Prerequisite: successful audition or permission of instructor. *Instructor: Dye*

MUSI 342 JAZZ ENSEMBLE (0-3-1)

Prerequisite: successful audition or permission of instructor. *Instructor: Dye*

**MUSI 345 APPLIED STUDIES IN JAZZ
IMPROVISATION** (2 hours credit)

Private lessons on specific advanced techniques in jazz improvisation.

MUSI 415(S) BAND ARRANGING (2-1-1)

Creative band arranging for marching, jazz, and concert bands. Includes the study of contemporary harmony, musical style, and scoring, supported by practical performance and analysis of student projects. *Instructor: Dye*

Naval Science (NAVA)

In addition to the courses below, NROTC students may be required to complete certain other university courses.

NAVA 101(F) NAVAL ORIENTATION (4-0-0)

Introduction to naval traditions and customs, seamanship, naval organization and missions, and the fundamental concepts of seapower. *Instructor: Wisniewski*

NAVA 102(S) NAVAL ENGINEERING-NAVAL SHIP SYSTEMS I (4-0-3)

Study of ship propulsion systems, auxiliary systems, steering systems, electrical power distribution, ship design, ship stability, and damage control measures. *Instructor: Lethcoe*

NAVA 201(F) NAVAL WEAPONS-NAVAL SHIP SYSTEMS II (3-0-3)

Study of the theory and employment of weapons systems. Includes processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives, as well as a detailed description of the physical aspects of radar and underwater sound. *Instructor: Lethcoe*

NAVA 202(S) SEAPOWER AND MARITIME AFFAIRS (3-0-2)

Readings, discussions, and research on selected topics related to the history, importance, and impact of seapower on modern civilization. *Instructor: Wisniewski*

NAVA 301(F) NAVIGATION (3-0-3)

Comprehensive study of marine navigators and laws of vessel operations. Includes coastal piloting, navigational aids, nautical astronomy, satellite and inertial systems, and rules of the nautical road. Corequisite: NAVA 311. *Instructor: Lethcoe*

NAVA 302(S) NAVAL OPERATIONS (3-0-2)

Analysis of ship movements, formations, and fleet operations. Includes ship operations case studies, maneuvering board, tactical publications, and communications. *Instructor: Wisniewski*

NAVA 303(F) EVOLUTION OF WARFARE (3-0-2)

Historical survey of the evolution of the conduct of warfare. Includes strategy, tactics, weapons, organization, and military leaders/thinkers. *Instructor: Austin*

NAVA 311(F) NAVIGATION LAB (0-2-0)

Instructor: Lethcoe

NAVA 401(F) LEADERSHIP AND MANAGEMENT (2-0-2)

Introduction to the principles and concepts of management, organization, leadership, information systems, and decision making. *Instructor: Boyer*

NAVA 402(S) LEADERSHIP AND ETHICS (2-0-1)

Comprehensive study of leadership principles, with emphasis on ethics, human resources management, military law and discipline, and administration. *Instructors: Austin, Boyer, Lethcoe*

NAVA 410(F) AMPHIBIOUS WARFARE (3-0-2)

Study of the history of amphibious warfare, using case studies to examine doctrine, tactics, and the factors necessary for successful operations. *Instructor: Austin*

Natural Sciences (NSCI)

The Wiess School of Natural Sciences

NSCI 111(F) SCIENCE TODAY I: PHYSICS AND ASTRONOMY (3-0-3)**DISTRIBUTION COURSE: GROUP III - A FOUNDATION COURSE**

Survey of key principles in physics and astronomy, with emphasis on the study of scientific methodology and a few universal laws, which are then tied to practical experience and societal issues. Includes preparation enabling students to appreciate popular accounts of scientific discoveries and to take informed stances on contemporary scientific issues. Open to nonscience and nonengineering majors only. *Instructors: Chan, Freeman*

NSCI 112(S) SCIENCE TODAY II: CHEMISTRY, BIOLOGY, AND EARTH SCIENCE (3-0-3)**DISTRIBUTION COURSE: GROUP III - A FOUNDATION COURSE**

Survey of the main principles of chemistry, biology, and earth science, with emphasis on the study of scientific methodology and a few universal laws, which are then tied to practical experience and societal issues. Includes preparation enabling students to appreciate popular accounts of scientific discoveries and to take informed stances on contemporary scientific issues. Open to nonscience and nonengineering majors only. *Instructors: Hutchinson, Matthews, Sawyer*

NSCI 230(S) COMPUTATION IN THE NATURAL SCIENCES (3-0-3)

Introduction to scientific problem solving and analysis using MATLAB on a UNIX workstation, with emphasis on the use of numerical methods to solve and visualize problems from the physical sciences that cannot be treated analytically. Includes lectures and seven computational projects. Previous computing experience not required. Prerequisites: either CHEM 101 and 102 or 111 and 112; either MATH 101 and 102 or MATH 121 and 122; PHYS 101 and 102; and MATH 211 (may take MATH 211 concurrently). *Instructors: Hutchinson, Polking*

Philosophy (PHIL)

The School of Humanities

PHIL 100(S) PROBLEMS OF PHILOSOPHY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of traditional and contemporary authors on such topics as the nature of scientific knowledge, the theory of justice, and the conflict between determinism and freedom. Normally offered every year. *Instructors: DeRose, Margolis, Sher*

PHIL 101(F) CONTEMPORARY MORAL ISSUES (3-0-3)

DISTRIBUTION COURSE: GROUP I

Examination of moral issues surrounding such topics as abortion, euthanasia, war, capital punishment, justice, and equality. Limited enrollment (100). Normally offered every year. *Instructors: DeRose, Temkin*

PHIL 103(S) PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Examination of current research in cognitive science and its philosophical implications. Includes whether or not the mind is a computational system, how the mind is organized, and whether or not certain components of the mind are innate. Normally offered every year. *Instructor: Margolis*

PHIL 104(F) PHILOSOPHICAL PERSPECTIVES ON SCIENCE (3-0-3)

DISTRIBUTION COURSE: GROUP I

An examination of the nature, origins, and impact of scientific knowledge from a variety of disciplinary perspectives, both historical and contemporary. Topics will include: the distinction between science and pseudoscience, the possibility of knowledge based upon experience, the nature of progress in science, recent challenges to the objectivity of science, and ethical issues in modern technology. Normally offered every year. *Instructor: Hitchcock*

PHIL 105 HISTORICAL INTRODUCTION TO PHILOSOPHY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study and discussion of central ideas of Western philosophy as developed by its original thinkers. Normally offered every other year. *Instructor: Brody*

PHIL 106(F) LOGIC (3-0-3)

DISTRIBUTION COURSE: GROUP III

Introduction to the formal theory of reasoning, which will be used to assess the validity of arguments in natural languages. Normally offered every year. Required for philosophy majors; may substitute PHIL 305. *Instructors: DeRose, Hitchcock*

PHIL 201(F) HISTORY OF PHILOSOPHY I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Required for philosophy majors. *Instructor: Morrison*

PHIL 202(S) HISTORY OF PHILOSOPHY II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of the history of Western philosophy from the 17th to the 20th century, with emphasis on the 17th and 18th centuries. Required for philosophy majors. Normally offered every year. *Instructor: Kulstad*

PHIL 301(F) ANCIENT AND MEDIEVAL PHILOSOPHY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of major philosophical writings from the 4th century B.C. through the 14th century A.D. Content varies from year to year. Normally offered every year. *Instructor: Morrison*

PHIL 302(S) MODERN PHILOSOPHY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Examination of themes or authors in 17th- and 18th-century philosophy. Prerequisite: one course in philosophy. Normally offered every year. *Instructors: DeRose, Kulstad*

PHIL 303 THEORY OF KNOWLEDGE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Studies in the theory of knowledge. Includes analysis of knowledge, foundations of knowledge, skepticism, and perception. Prerequisite: one course in philosophy. Normally offered every year. *Instructors: DeRose, Kulstad*

PHIL 304(F) METAPHYSICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Examination of metaphysical theories in the works of historical and contemporary thinkers. Topics may include: free will, the identity of persons over time, causation, possibility and necessity, design and chance, the nature of existence, the nature of time. Prerequisite: one course in philosophy. Normally offered every year. *Instructors: DeRose, Hitchcock, Morrison*

PHIL 305(F) MATHEMATICAL LOGIC (3-0-3)

DISTRIBUTION COURSE: GROUP III

Logic is the study of forms of argument, with one of the main goals being to distinguish correct from incorrect forms of argument. In this course, we systematically develop a formal language and methods for assessing correctness of arguments in this language. Doing this requires facility both in manipulating the language and in thinking about it. There are two independent ways of assessing arguments, one depending on derivation by a series of rules, the other being in terms of interpretations of the language. After studying each of these independently, we prove that they coincide in their answers. Along the way, we discover some important strengths and weaknesses of the language and, by translating back and forth into English, learn a lot about the logical structure of English. We briefly explore some further directions for developing logic, specifically modal logic—the logic of necessity and possibility—and, if there is time, some tense logic. A previous logic course is helpful, though the course is self-contained. *Instructor: Grandy*

PHIL 306(F) ETHICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Philosophical analysis of traditional and contemporary theories of ethics. Normally offered every year. *Instructors: Sher, Temkin*

PHIL 307(S) SOCIAL AND POLITICAL PHILOSOPHY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of the questions of what makes a society just, on what grounds may the liberty of individuals be legitimately limited, and what social ends may a state legitimately pursue. Normally offered every year. *Instructors: Sher, Temkin*

PHIL 308 CONTINENTAL PHILOSOPHY (3-0-3)

DISTRIBUTION COURSE: GROUP I

An examination of central topics in the thought of Kant and Hegel, with some consideration given to how these issues influence later philosophers in the 19th- and 20th-century Continental European tradition. Topics vary from year to year. May be repeated for credit. *Instructor: Crowell*

PHIL 309(F) AESTHETICS (3-0-3)

An introduction to the philosophy of art. The course draws upon traditional and contemporary philosophical theories and upon examples drawn from the visual, literary, and performing arts (including architecture), to address questions such as What is a work of art? What factors enter into the way spectators and performers interpret artwork? What makes work good? Can art speak the truth? *Instructor: Crowell*

PHIL 312(F) PHILOSOPHY OF MIND (3-0-3)

DISTRIBUTION COURSE: GROUP I

Inquiry into the nature of mind, with emphasis on the mind/body problem. Prerequisite: one course in philosophy. Normally offered every year. *Instructor: Margolis*

PHIL 313(S) PHILOSOPHY OF SCIENCE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

A survey of contemporary issues in the philosophy of science. How do scientific theories provide us with an understanding of the world that we observe? How do our observations, in turn, provide support for scientific theories? The course will also encompass philosophical questions that arise within particular theories, such as relativity and evolutionary biology. No knowledge of any one science is presupposed. Prerequisite: one course in philosophy. Normally offered every year. Instructor: *Hitchcock*

PHIL 315(S) ETHICS, MEDICINE, AND PUBLIC POLICY (3-0-3)

Examination of ethical and policy questions raised by contemporary medical techniques and by contemporary modes for the delivery of medical services. Normally offered every year. Instructor: *Engelhardt*

PHIL 316(F) PHILOSOPHY OF LAW (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Examination of the philosophical foundations of such diverse areas of the law as criminal law, property law, and tort and contract law. Normally offered every other year. Instructor: *Brody*

PHIL 353(S) THE PHILOSOPHY OF LANGUAGE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

The nature of language has captured the interest of philosophers not only because of the enormous importance of language to human affairs but also because of the conviction, at least in this century, that a proper understanding of language is necessary for true philosophical understanding. The most significant figures in 20th-century philosophy, however different their perspectives, have all made contributions to the study of language. This course will focus on philosophical work in one area that has been especially controversial—the nature of meaning. Nothing could be more obvious than the fact that sentences have meaning; meaning is what gives language its life. Yet meaning is deeply puzzling. What exactly is meaning? What is it that makes a sentence have its meaning? How is it that we can talk about things that don't exist, or for that matter about things that will never exist? Does meaning depend on the relation between language and the extra-linguistic world? If so, what could this relation be? Topics to be covered: linguistic relativity, verificationism, analyticity, meaning holism, the semantics of names and definite descriptions, the causal theory of reference, philosophical skepticism about meaning. Prerequisite: one previous course in philosophy or permission of instructor. Also offered as LING 353. Instructors: *DeRose, Grandy, Margolis*

PHIL 355 PHILOSOPHICAL TOPICS IN ADVANCED LOGIC (3-0-3)

Syntactic and semantic study of various systems of formalization for modalities, tenses, and other intensional concepts. Includes the use and comparison of these systems to evaluate their strengths and limits, as well as to open discussion of questions such as what is a logical constant and what is the scope of logic. Normally offered alternate years. Instructor: *Grandy*

PHIL 357(S) INCOMPLETENESS, UNDECIDABILITY, AND COMPUTABILITY (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Proof of Godel's Incompleteness Theorems for number theory in several forms and by various methods, as well as development of several definitions of computability for number-theoretic functions, which are then shown to be equivalent. Includes proof of the unsolvability of the Halting Problem and analysis of Church's thesis, as well as exploration of the extension of the concept of computability to real-valued functions. Normally offered alternate years. Instructor: *Grandy*

PHIL 390 (S) CONTEMPORARY TOPICS (3-0-3)

Discussion of problems in selected areas of philosophy.

PHIL 401(F) INDEPENDENT READING I AND II (hours variable)**PHIL 402(S)**

Prerequisite: permission of the department. Instructor: *Sher*

PHIL 501 SEMINAR IN ANCIENT AND MEDIEVAL PHILOSOPHY
(3-0-3)

Graduate version of PHIL 301. *Instructor: Morrison*

PHIL 502(S) SEMINAR IN MODERN PHILOSOPHY (3-0-3)

Graduate version of PHIL 302. *Instructor: Kulstad*

PHIL 503 SEMINAR IN THEORY OF KNOWLEDGE (3-0-3)

Graduate version of PHIL 303. *Instructors: DeRose, Kulstad*

PHIL 504 SEMINAR IN METAPHYSICS (3-0-3)

Graduate version of PHIL 304. *Instructors: DeRose, Grandy*

PHIL 505(F) MATHEMATICAL LOGIC (3-0-3)

Graduate version of PHIL 305. Open to philosophy graduate students only. *Instructor: Grandy*

PHIL 506(S) SEMINAR IN ETHICS (3-0-3)

Graduate version of PHIL 306. *Instructors: Brody, Temkin*

PHIL 507 SEMINAR IN SOCIAL AND POLITICAL PHILOSOPHY (3-0-3)

Graduate version of PHIL 307. *Instructors: Brody, Sher*

PHIL 508 SEMINAR IN CONTINENTAL PHILOSOPHY (3-0-3)

Graduate version of PHIL 308. Close study of selected topics and figures in 20th-century European philosophy, in particular the phenomenology of Edmund Husserl and Martin Heidegger and its dissemination in movements such as existentialism, hermeneutics, and deconstruction. Topics vary from year to year; may be repeated for credit. *Instructor: Crowell*

PHIL 509(F) SEMINAR IN AESTHETICS (3-0-3)

Graduate version of PHIL 309. *Instructor: Crowell*

PHIL 512(F) SEMINAR IN PHILOSOPHY OF MIND (3-0-3)

Graduate version of PHIL 312. *Instructor: Margolis*

PHIL 513(S) SEMINAR IN PHILOSOPHY OF SCIENCE (3-0-3)

Instructor: Hitchcock

PHIL 521(F) SEMINAR IN KANT AND HEGEL (3-0-3)

Instructor: Engelhardt

PHIL 530 FREGE TO LOGICAL POSITIVISM (3-0-3)

Instructor: Brody

PHIL 536(F) SEMINAR IN MEDICAL ETHICS (3-0-3)

Instructor: Brody

PHIL 553(F) PHILOSOPHY OF LANGUAGE (3-0-3)

Graduate version of PHIL 353. *Instructors: DeRose, Grandy*

PHIL 590(S) TOPICS IN PHILOSOPHY (3-0-3)

PHIL 601(F) ADVANCED INDEPENDENT READING I
PHIL 602(S) AND II (hours variable)

Instructor: Sher

PHIL 800 RESEARCH AND THESIS (hours variable)

Instructor: Sher

Physics (PHYS)

The Wiess School of Natural Sciences

PHYS 101(F) MECHANICS (WITH LAB) (3-3-3)

DISTRIBUTION COURSE: GROUP III

Calculus-based survey of physics. Includes classes and lab exercises on topics chosen from mechanics, electricity, and magnetism. Primarily for physical science and engineering students. Required for all physics majors; may substitute PHYS 111.

PHYS 102(S) ELECTRICITY AND MAGNETISM (WITH LAB) (3-3-4)

DISTRIBUTION COURSE: GROUP III

Continuation of PHYS 101. Required for all physics majors; may substitute PHYS 112.

PHYS 111(F) MECHANICS (WITH LAB) (3-3-3)

DISTRIBUTION COURSE: GROUP III

Calculus-based survey of physics. Includes classes and lab exercises on topics chosen from mechanics, electricity, and magnetism. Primarily for physical science and engineering students with strong high school background in physics. May receive credit for only one of PHYS 101, 111, and 125. Prerequisites: high school physics and calculus.

PHYS 112(S) ELECTRICITY AND MAGNETISM (WITH LAB) (3-3-4)

DISTRIBUTION COURSE: GROUP III

Continuation of PHYS 111. May receive credit for only one of PHYS 102, 112, and 126. Prerequisites: high school physics and calculus.

PHYS 125(F) GENERAL PHYSICS I (WITH LAB) (3-3-4)

DISTRIBUTION COURSE: GROUP III

Calculus-based survey of physics. Includes classes and lab exercises on topics chosen from mechanics, waves, electricity, magnetism, optics, and modern physics. Primarily for bioscience and premedical students.

PHYS 126(S) GENERAL PHYSICS II (WITH LAB) (3-3-4)

DISTRIBUTION COURSE: GROUP III

Continuation of PHYS 125.

PHYS 141(F) CONCEPTS IN PHYSICS (3-0-3)

DISTRIBUTION COURSE: GROUP III

Study of concepts in physics, with emphasis on the nature of physical phenomena, the conceptual development of physics, and related cultural influences.

PHYS 201(F) WAVES AND OPTICS (3-0-3)

Third semester of the four-semester sequence in physics for science and engineering students. Required for all physics majors. See also PHYS 231.

PHYS 202(S) MODERN PHYSICS (3-0-3)

Final semester of the four-semester sequence in physics for science and engineering students. Required for all physics majors.

PHYS 231(F) ELEMENTARY PHYSICS LAB II (0-3-1)

Recommended for students enrolled in PHYS 201. Required for all physics majors.

PHYS 301(F) INTERMEDIATE MECHANICS (4-0-4)

Study of classical mechanics and appropriate mathematical methods, with emphasis on problem solving. Required for all physics majors.

PHYS 302(S) INTERMEDIATE ELECTRODYNAMICS (4-0-4)

Study of classical electrodynamics and appropriate mathematical methods, with emphasis on problem solving.

PHYS 311(F) INTRODUCTION TO QUANTUM PHYSICS I (3-0-3)

Survey of the fundamentals of quantum mechanics and applications. Required for all physics majors.

PHYS 312(S) INTRODUCTION TO QUANTUM PHYSICS II (3-0-3)

Continuation of PHYS 311. Required for all physics majors.

PHYS 331 JUNIOR PHYSICS LABORATORY I (1-6-2)

Required for regular and space physics options.

PHYS 332 JUNIOR PHYSICS LABORATORY II (1-6-2)

Required for regular physics option.

PHYS 411(S) INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS (3-0-3)

Undergraduate version of PHYS 542. Required for regular physics option.

PHYS 412(F) SOLID-STATE PHYSICS (3-0-3)

Undergraduate version of PHYS 563. Required for regular physics option.

PHYS 425(F) STATISTICAL AND THERMAL PHYSICS (3-0-3)

Required for regular and applied physics options.

PHYS 431(F) SENIOR PHYSICS RESEARCH I (1-6-3)

Required for regular, space, and applied physics options.

PHYS 432(S) SENIOR PHYSICS RESEARCH II (1-6-3)

Required for regular, space, and applied physics options.

PHYS 461/462 INDEPENDENT RESEARCH (hours variable)

Reading course in special topics.

PHYS 515(F) CLASSICAL DYNAMICS (3-0-3)

Lagrangian and Hamiltonian mechanics; general relativistic mechanics. Also offered as SPAC 515.

PHYS 521(F) QUANTUM MECHANICS I (3-0-3)

Graduate-level study of quantum mechanics.

PHYS 522(S) QUANTUM MECHANICS II (3-0-3)

Continuation of PHYS 521.

PHYS 526(F) STATISTICAL PHYSICS (3-0-3)

PHYS 532(S) CLASSICAL ELECTRODYNAMICS (3-0-3)

Special relativity, covariant formulation of electrodynamics, wave phenomena and charged-particle radiation. Also offered as SPAC 532.

PHYS 542(S) INTRODUCTION TO ELEMENTARY PARTICLE PHYSICS (3-0-3)

Graduate version of PHYS 411. Includes an introduction to the theory of elementary particles and the characteristic features of experimental data.

PHYS 543(F) EXPERIMENTAL NUCLEAR AND PARTICLE PHYSICS (3-0-3)

Continuation of PHYS 542.

PHYS 552 SPECIAL TOPICS IN BIOPHYSICS (3-0-3)**PHYS 563(F) INTRODUCTION TO SOLID-STATE PHYSICS I (3-0-3)**

Graduate version of PHYS 412. Includes an introduction to the fundamental concepts of crystalline solids (e.g., crystal structure, the band theory of electrons, and lattice vibration theory). Also offered as ELEC 563.

PHYS 564(S) INTRODUCTION TO SOLID-STATE PHYSICS II (3-0-3)

Continuation of PHYS 563. Includes the scattering of waves by crystals, transport theory, and magnetic phenomena. Also offered as ELEC 564.

PHYS 566 SURFACE PHYSICS (3-0-3)**PHYS 571 ATOMIC AND MOLECULAR SPECTRA (3-0-3)**

Study of atomic structure, the principles of lasers, and the fundamental interactions of atoms with electromagnetic radiation. Includes coherent effects, laser spectroscopy, quantum optics, and laser cooling of atoms. Prerequisite: PHYS 521.

PHYS 574 SPIN-SENSITIVE ELECTRON SPECTROSCOPIES (3-0-3)**PHYS 581 COLLISION THEORY (3-0-3)**

Study of potential scattering and resonances, Born and semiclassical approximations, quantum dynamics and S-matrix theory, and multichannel phenomena, with applications to simple atomic and nuclear systems. Prerequisites: PHYS 521 and 522.

PHYS 595/596 PHYSICS TEACHING (1-3-3 EACH SEMESTER)**PHYS 621 ADVANCED QUANTUM MECHANICS I (3-0-3)**

Study of relativistic quantum mechanics and quantum electrodynamics.

PHYS 622 ADVANCED QUANTUM MECHANICS II (3-0-3)

Study of QED, QCD, and unified theories.

PHYS 663 CONDENSED MATTER THEORY: APPLICATIONS (3-0-3)**PHYS 664 CONDENSED MATTER THEORY: MANY-BODY FORMALISM (3-0-3)****PHYS 665 MAGNETISM (3-0-3)****PHYS 800 GRADUATE RESEARCH (HOURS VARIABLE)**

Polish (PLSH)

The School of Humanities/Department of German and Slavic Studies

PLSH 101(F) ELEMENTARY POLISH I (3-1-4)

DISTRIBUTION COURSE: GROUP I

Introductory study of Polish with emphasis on speaking and reading. PLSH 102 must be completed to receive credit for PLSH 101. Not offered 1997-98. *Instructor: Rybicki*

PLSH 102(S) ELEMENTARY POLISH II (3-1-4)

DISTRIBUTION COURSE: GROUP I

Continuation of PLSH 101. Prerequisite: PLSH 101. *Instructor: Koehler*

Political Science (POLI)

The School of Social Sciences

POLI 209(S) INTRODUCTION TO CONSTITUTIONALISM AND MODERN POLITICAL THOUGHT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of constitutionalism and authoritarianism from Machiavelli to Marx. Includes an introduction to contemporary ideologies. With POLI 210 meets state professional requirements for teachers. Limited enrollment (100). *Instructor: Cuthbertson*

POLI 210 AMERICAN GOVERNMENT AND POLITICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of major topics in American politics. Includes public opinion, group politics, political parties, elections, congressional-presidential-bureaucratic politics, and judicial politics. With POLI 209 meets state professional requirements for teachers. Limited enrollment (100). *Instructors: Alford (spring), Black (fall)*

POLI 211 INTERNATIONAL RELATIONS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to the study of international relations. Includes a range of topics, from the role of individuals to the impact of the international system, as well as major issues such as the causes of war and problems of development in the Third World. Limited enrollment (100). *Instructors: Bennett, Stoll*

POLI 212 INTRODUCTION TO COMPARATIVE POLITICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of political institutions and behavior in selected democratic, communist, and Third World countries. Limited enrollment (fall: 100; spring: 40). *Instructors: Ambler, Lust-Okar*

POLI 300(F) FEDERALISM AND INTERGOVERNMENTAL POLITICS (3-0-3)

Study of the relationships between the federal government and the states. Includes the effects of national policy on state governments and an exploration of changes in intergovernmental aid transfers between levels of government. Limited enrollment (40). Not offered 1997-98.

POLI 301(S) STATE POLITICS (3-0-3)

Exploration of the constraints and influences affecting the adoption and implementation of public policies in the American states. Limited enrollment (40). Not offered 1997-98.

POLI 305(F) DIRECTED READING I (hours variable)

Independent reading under the supervision of a member of the department. Open to majors in the honors program with junior standing and to others in special cases with the permission of the instructor. *Instructor: Stoll*

POLI 306(S) DIRECTED READING II (hours variable)

See POLI 305. *Instructor: Stoll*

POLI 307 POLITICAL SCIENCE INTERNSHIP (1 to 3 hours credit)

Internship completed in conjunction with an independently constructed set of readings. Regular meetings with the instructor and a final paper required. *Instructor: Whitford*

POLI 317(F) CONGRESS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of the role of Congress in the American political system. Includes the historical development of Congress, the current status of Congress, and the functions of Congress in the American political system. Limited enrollment (30). *Instructor: Ostdiek*

POLI 318(S) THE PRESIDENCY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Analysis of presidential powers and behavior in the context of legal, electoral, personal, and other forces that shape and limit the actions of the President. Limited enrollment (40). *Instructor: Brace*

POLI 321(F) AMERICAN CONSTITUTIONAL LAW (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the interpretation of the Constitution by the Supreme Court. Open to juniors and seniors preferably. Limited enrollment (50). *Instructor: Cuthbertson*

POLI 331(S) ENVIRONMENTAL POLITICS AND POLICY (3-0-3)

Considers the major issues in the increasingly important policy area of the environment. Emphasizes the American experience but also considers certain crucial international aspects of these issues. Limited enrollment (40). *Instructor: Whitford*

POLI 332(S) URBAN POLITICS (3-0-3)

Exploration of issues of political behavior and public policy in urban and metropolitan areas. Includes urban decline and revitalization, the conflict between Snowbelt and Sunbelt cities, fiscal management, and urban and suburban relations. See also POLI 432. Limited enrollment (40). *Instructor: Hamm*

POLI 333(S) COMPARATIVE LEGISLATURES (3-0-3)

Examination of similarities and differences of legislatures in different countries. Includes the causes and consequences of these differences. See also POLI 433. Limited enrollment (40). Not offered 1997-98.

POLI 334(F) PARTIES AND INTEREST GROUPS (3-0-3)

Examination of the organization and behavior of political parties and interest groups within the American political system, with emphasis on the extent to which these organizations operate differently across the national, state, and local levels of government. Limited enrollment (40). See also POLI 434. Not offered 1997-98.

POLI 335(S) POLITICAL ENVIRONMENT OF BUSINESS (3-0-3)

Study of the foundations of government involvement in public policy and the institutional processes guiding executive, legislative, and bureaucratic officials. Includes theories of collective action and their application in the political world. Limited enrollment (40). *Instructor: Stein*

POLI 336(F) POLITICS OF REGULATION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the government's regulation of business and the political factors that shape its content. Limited enrollment (40). *Instructor: Whitford*

POLI 337(S) PUBLIC POLICY AND BUREAUCRACY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the role that public bureaucracy plays in national policy making. Includes an examination of sources of agency power, which are linked to different policy outcomes. Limited enrollment (40). *Instructor: Whitford*

POLI 338(F) POLICY ANALYSIS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Familiarizes students with the analytical tools necessary for evaluation and analyzing public policies. It is intended to serve as an introductory class to the Policy Studies major. Limited enrollment (30). Also offered as SOSC 301. *Instructor: Ostdiek*

POLI 339(F) SOUTHERN POLITICS (3-0-3)

Examination of selected political patterns and trends in the modern South. Includes political developments within the region and the impact of the South on American politics generally. Limited enrollment (40). Not offered 1997-98. *Instructor: Black*

POLI 340 ANCIENT AND MEDIEVAL POLITICAL THEORY (3-0-3)

Study of the sources of ancient and medieval political thought, with emphasis on the historical analysis of political philosophy and mythology and the influence of Plato and Aristotle. Not offered 1997-98. *Instructor: Cuthbertson*

POLI 351(F) POLITICS OF SOUTHEAST ASIA (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the political processes, institutions, and attitudes in selected Southeast Asian states, with emphasis on the postwar period. Includes traditional forces influencing contemporary political behavior. Limited enrollment (40). *Instructor: von der Mehden*

POLI 353(S) REFORM IN POST-MAO CHINA (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the origins and development of the gradual but revolutionary political and economic reforms in China, with emphasis on the changing roles of the Communist Party, of the central bureaucracy and local governments, of the military, of the emerging entrepreneurial class, and of the 80 million members of the overseas Chinese community. Limited enrollment (40). *Instructor: Lewis*

POLI 354(F) LATIN AMERICAN POLITICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the political process in contemporary Latin America, with emphasis on selected major countries. Limited enrollment (40). *Instructor: Brown*

POLI 355(S) GOVERNMENT AND POLITICS OF THE MIDDLE EAST (3-0-3)

A brief historical overview is combined with description of political systems in the Middle East. These states are then used to critique theories of comparative politics. Limited enrollment (40). *Instructor: Lust-Okar*

POLI 360(S) WESTERN EUROPEAN DEMOCRACIES (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of government and politics in Western European democracies, with emphasis on Great Britain, France, and Germany. Limited enrollment (40). *Instructor: Ambler*

POLI 361(F) COMPARATIVE POSTCOMMUNIST SYSTEMS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the transition from communist governments and centrally planned economies to more democratic political systems and market economies, with emphasis on the success of "transition" theories in explaining changes in Eastern Europe and the former Soviet Union. Limited enrollment (40). Not offered 1997-98.

POLI 362(S) EUROPEAN INTEGRATION (3-0-3)

Examination of European integration since World War II, with emphasis on the European Community (EC) and its institutions and policy processes, as well as the consequences of European unity for the political process in European societies. Limited enrollment (40). *Instructor: Anderson*

POLI 364(F) GERMAN POLITICS (3-0-3)

Examination of political processes, institutions, and attitudes in Germany and German-speaking societies, with emphasis on the Federal Republic of Germany. Includes the politics of Austria and the former East Germany. Limited enrollment (40). Not offered 1997-98.

POLI 365(F) POLITICS OF FRANCE (3-0-3)

Study of political institutions, parties, and culture, as well as public policy, in contemporary France from a historical and comparative perspective. Limited enrollment (40). Not offered 1997-98. *Instructor: Ambler*

POLI 366(F) ELECTIONS IN WESTERN DEMOCRACIES (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of political parties, party systems, electoral systems, and voting behavior in Western democracies. Limited enrollment (40). Not offered 1997-98.

POLI 367(F) DEMOCRACY IN DEVELOPING COUNTRIES: ISRAEL, INDIA, IRELAND, AND CHILE (3-0-3)

Exploration of why democratic institutions that "work" in the developed world may need modification when applied to developing democracies. Includes the impact of the colonial experience, of ethnic and regional conflicts, and of the accelerated pace of change. Limited enrollment (40). Not offered 1997-98.

POLI 371(F) COMPARATIVE FOREIGN POLICY (3-0-3)

Survey and comparative analysis of the foreign policies and policy-making systems of selected countries. Includes China, Japan, and the former Soviet Union. Limited enrollment (40). Not offered 1997-98.

POLI 372(S) AMERICAN FOREIGN POLICY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of internal and external aspects of foreign policy leadership, presidential initiative, congressional control, press, public opinion, and crisis management. May not take as a managerial studies elective. Limited enrollment (40). *Instructor: Morgan*

POLI 373(F) INTERNATIONAL CONFLICT (3-0-3)

Exploration of the theoretical basis of, and empirical evidence for, a number of explanations for interstate war. Includes contemporary theories dealing with dispute escalation, arms races, deterrence, crisis management, and low-intensity conflict. Limited enrollment (40). *Instructor: Morgan*

POLI 374(S) STRATEGIC INTERACTIONS IN INTERNATIONAL RELATIONS (3-0-3)

Introduction to the uses of game theory in the study of international relations. Limited enrollment (40). Not offered 1997-98.

POLI 376(S) INTERNATIONAL POLITICAL ECONOMY (3-0-3)

Course traces the evolution of the international political economy over the last century. Emphasis is placed on examining interaction between developments in the international economy and domestic politics in the industrialized and developing worlds. Limited enrollment (40). *Instructor: Brown*

POLI 378(F) POLITICS OF AMERICAN NATIONAL SECURITY (3-0-3)
DISTRIBUTION COURSE: GROUP II

Examination of major issues of national security policy. Includes strategic doctrines, policy-making processes on defense issues, arms control, and the defense of Europe. May not take as managerial studies elective. Limited enrollment (75). *Instructor: Stoll*

POLI 379(S) PROBLEMS IN INTERNATIONAL RELATIONS (3-0-3)
DISTRIBUTION COURSE: GROUP II

Limited enrollment (40). Not offered 1997-98.

POLI 380(F) POLITICAL BEHAVIOR (3-0-3)
DISTRIBUTION COURSE: GROUP II

Examination of basic concepts in political behavior. Includes politicization, public opinion, political participation, and voting behavior, as well as basic data analysis techniques. Limited enrollment (40). *Instructor: Alford*

POLI 382(S) PUBLIC OPINION (3-0-3)

Study of survey research methodology as it applies to political opinion polling. Includes theories of attitude formation and change, the impact of the media on public opinion, and measurement issues in the survey research process. Limited enrollment (25). Prerequisites: prior course work in the social sciences and permission of instructor. See also POLI 496. *Instructor: Funk*

POLI 395(S) INTRODUCTION TO STATISTICS (3-0-3)

Introduction to research design and quantitative methods used in contemporary political science research. Students will apply the tools of social science inquiry in a series of projects designed to examine political attitudes and behavior. Limited enrollment (40). *Instructor: Bennett*

POLI 405(F) SENIOR THESIS (3-0-3 each semester)**POLI 406(S)**

Open to senior honors majors with the permission of the department. Must complete both POLI 405 and 406 to receive credit. Limited enrollment (20). Prerequisite: permission of instructor. *Instructor: Stoll*

POLI 410(F) ADJUDICATION OF CURRENT SOCIAL ISSUES (3-0-3)

Examination of how most political and social questions in America (as Tocqueville observed) ultimately become judicial questions. Includes current developments in basic constitutional issues, property, contracts, torts, crimes, corporate responsibility, and privacy. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Hudspeth*

POLI 417(S) SEMINAR IN CONGRESS (3-0-3)

Content varies from year to year. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98.

POLI 430(F) SEMINAR IN TEXAS POLITICS (3-0-3)

Research seminar in the history of Texas politics. Limited enrollment (20). Prerequisite: permission of instructor. *Instructor: Cuthbertson*

POLI 431(F) ELECTORAL CAMPAIGNS (3-0-3)

Examination of the role of campaigns in determining the outcome of political races. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Alford*

POLI 432(F) URBAN POLITICS (3-0-3)

Enriched version of POLI 332, conducted as a research seminar. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Hamm*

POLI 433(S) COMPARATIVE LEGISLATURES (3-0-3)

Enriched version of POLI 333, conducted as a research seminar. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Hamm*

POLI 434(F) INTEREST GROUPS AND POLITICAL PARTIES (3-0-3)

Enriched version of POLI 334, conducted as a research seminar. Limited enrollment (15).

Instructor: Hamm

POLI 437(F) REPRESENTATION (3-0-3)

Study of problems of representation in the U.S. political system. Limited enrollment (15). Not offered 1997-98. *Instructor: Alford*

POLI 438(F) RACE AND PUBLIC POLICY (3-0-3)

Study of minority group politics and how race structures contemporary U.S. politics. Includes the myths and realities of minority groups, symbolic politics and race, pluralism as a model of U.S. democracy, the intersection of class, race, and gender, civil rights movements, group consciousness, public opinion regarding minorities, and the response of national institutions to issues of race. Limited enrollment (15). Not offered 1997-98.

POLI 439(S) RESEARCH SEMINAR ON SOUTHERN POLITICS (0 hours credit)

Examination of political behavior and political institutions in the southern states, with emphasis on contemporary Texas politics. Limited enrollment (15). *Instructor: Black*

POLI 440(S) CURRENT LEGISLATIVE ISSUES (3-0-3)

Intensive study of a small number of current legislative issues. Includes pertinent policy issues and the problems of passing and implementing legislation from practical and theoretical perspectives. Limited enrollment (15). Prerequisites: two courses in American political institutions and behavior or American public policy, and permission of instructor. Not offered 1996-97. *Instructor: Hobby*

POLI 454(F) REVOLUTIONARY MOVEMENTS (3-0-3)

Examination of the causes and outcomes of revolutions, both past and contemporary, and their relationships to the societies in which they occur. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Lewis*

POLI 456(F) REGIME TRANSFORMATIONS AND TRANSITIONS (3-0-3)

This course explores theories of development and transition among political systems. Focus is primarily on post-colonial states, with some comparison with the development of Western democracies. Limited enrollment (15). *Instructor: Lust-Okar*

POLI 457(S) CONDITIONS OF DEMOCRACY (3-0-3)

Examination of why some countries are democratic and others are not, with emphasis on the breakdown and restoration of democracy in Latin America and southern Europe. Limited enrollment (15). Not offered 1997-98.

POLI 458(S) PROPERTY RIGHTS AND PRIVATIZATION (3-0-3)

Study of how social scientists explain institutional change in terms of formal rules (e.g., constitutions, laws, and regulations) and informal rules (e.g., social norms and conventions). Includes the growing neo-institutional literature on property rights and privatization, with emphasis on the logic and methods of rational choice explanations. Limited enrollment (15). Not offered 1997-98.

POLI 460(F) SEMINAR IN COMPARATIVE GOVERNMENT (3-0-3)

Seminar analyzing noneconomic factors influencing development in Asia. Limited enrollment (15). Prerequisite: permission of instructor. *Instructor: von der Mehden*

POLI 462(S) COMPARATIVE PUBLIC POLICY (3-0-3)

Seminar examining the process and substance of public policy across nations, with emphasis on Western democracies. Includes such policy areas as education, health, economic policy, and defense. Limited enrollment (15). Prerequisite: permission of instructor. *Instructor: Ambler*

POLI 463(S) COMPARATIVE POLITICAL ECONOMY (3-0-3)

Seminar exploring the interrelationship of economics and politics in advanced industrial societies. Includes economic policy making, political behavior and economic conditions, and the role of institutions in channeling conflicts between democracy and capitalism. Limited enrollment (15). Not offered 1997-98.

POLI 464(S) POLITICAL ECONOMY OF DEVELOPMENT (3-0-3)

A central priority developing nations face today concerns establishing economic growth; how best to achieve strong economic performance has both an economic and political dimension. This course seeks a rudimentary understanding of economic growth, concentrating on its political determinants. Limited enrollment (15). *Instructor: Brown*

POLI 465(S) INTERAMERICAN RELATIONS (3-0-3)

Seminar examining relations between the U.S. and the countries of Latin America, with emphasis on the efforts of the U.S. to promote or inhibit political change, including revolutionary change, in Latin America. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98.

POLI 466(F) POLITICAL PARTIES AND VOTING BEHAVIOR IN WESTERN DEMOCRACIES (3-0-3)

Seminar on the determinants of party systems, the structure and functions of parties, and theories of voting behavior in Western democracies. Limited enrollment (15). *Instructor: Stevenson*

POLI 470(F) TOPICS—INTERNATIONAL RELATIONS (3-0-3)

Seminar in conflict modeling and quantitative analysis of alliance formation. May be repeated for credit. Limited enrollment (15).

POLI 471(F) U.S. FOREIGN POLICY (3-0-3)

Not offered 1997-98.

POLI 472(S) AMERICAN FOREIGN POLICY (3-0-3)

Study of American foreign policy, its sources, and the process of policy formulation. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Morgan*

POLI 473(S) SEMINAR—DOMESTIC POLICY (3-0-3)

Not offered 1997-98.

POLI 474(F) COLLECTIVE SOCIAL CHOICE (3-0-3)

Introduction to a growing body of literature on how and why individual preferences dominate those of others. Includes the relationship between decision-making structures and the nature of decisional outcomes. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Morgan*

POLI 475(S) GAME THEORY (3-0-3)

Examination of current developments in game theory with applications to political science. Limited enrollment (15). Prerequisite: permission of instructor. Not offered 1997-98.

POLI 476(F) INTERNATIONAL POLITICAL ECONOMY (3-0-3)

Seminar surveying some of the primary theoretical perspectives and analytical approaches for studying international political economy. Includes a survey of contemporary literature, with special emphasis on theory and research, as well as instructions in how to critically evaluate research and set up a research project. Limited enrollment (15). Not offered 1997-98.

POLI 479(F) SEMINAR IN QUANTITATIVE INTERNATIONAL RELATIONS (3-0-3)

Seminar exploring the quantitative study of international relations, using the computer simulation GLOBUS. Includes students' development of their own studies of the simulation. Limited enrollment (15). Prerequisite: permission of instructor. *Instructor: Stoll*

POLI 480(F) SEMINAR IN POLITICAL BEHAVIOR (3-0-3)

Research seminar in political behavior, with emphasis on the application of social and cognitive psychology to the study of mass political behavior. Includes political socialization, models of voting behavior, and political participation. Limited enrollment (15). Prerequisite: permission of instructor. *Instructor: Funk*

POLI 490(S) MODERN POLITICAL THEORY AND INTERDISCIPLINARY FIELDS (3-0-3)

Study of the development of modern political theory and its relevance to contemporary problems. Limited enrollment (20). Not offered 1997-98. *Instructor: Cuthbertson*

POLI 495(F) INTRODUCTION TO STATISTICS (3-0-3)

Development of a working knowledge of statistics in political science. Includes the study of descriptive and inferential statistics, as well as "hands-on" experience with computer statistical packages. Limited enrollment (15). Prerequisite: permission of instructor. *Instructor: Alford*

POLI 496(F) SURVEY RESEARCH METHODS (3-0-3)

Enriched version of POLI 382, conducted as a research seminar. Offered alternate years. Enrollment limited. Prerequisite: permission of instructor. Limited enrollment (15). Not offered 1997-98. *Instructor: Funk*

POLI 503(S) TOPICS IN METHODS AND DATA ANALYSIS (3-0-3)

Study of applications of least squares and general linear model. Limited enrollment (15). Also offered as STAT 503. *Instructor: Brace*

POLI 510(S) SCOPE AND METHODS (3-0-3)

Introduction to research in political science, problems of the discipline, and basic political concepts. Includes the history of political science as a discipline. Prerequisite: permission of instructor. Limited enrollment (15). Not offered 1997-98.

POLI 511(F) MEASUREMENT AND RESEARCH DESIGN (3-0-3)

Study of advanced topics in research design and measurement theory. Prerequisite: permission of instructor. Limited enrollment (15). *Instructor: Funk*

POLI 520(S) APPROACHES TO COMPARATIVE GOVERNMENT (3-0-3)

Core graduate course. Includes an analysis of basic approaches to the study of comparative government. Open to undergraduates with permission of instructor. Limited enrollment (15). *Instructor: Stevenson*

POLI 525(S) COMPARATIVE POLITICS OF WESTERN DEMOCRACIES (3-0-3)

Research seminar on theories of political parties, voting behavior, party systems, and quantitative comparative political research. Limited enrollment (15). Not offered 1997-98.

POLI 527(S) ORGANIZATION THEORY (3-0-3)

Examination of applications of organization theory to the study of American political institutions. Limited enrollment (15). Not offered 1997-98.

POLI 530(F) APPROACHES TO AMERICAN GOVERNMENT (3-0-3)

Core graduate course. Includes an analysis of basic approaches to the study of American politics. Limited enrollment (15). Prerequisite: permission of instructor. *Instructor: Brace*

POLI 531(S) STATE POLITICS (3-0-3)

Examination of similarities and differences in the organization of state politics. Includes state legislative organization, state elite behavior, and policy implementation. Limited enrollment (15). Not offered 1997-98. *Instructor: Brace*

POLI 533(S) ADVANCED TOPICS IN POLITICAL BEHAVIOR (3-0-3)

Graduate research seminar in the subfield of political behavior. Content varies from year to year. Prerequisite: permission of instructor. Limited enrollment (15). Not offered 1997-98. *Instructor: Alford*

POLI 537(F) PUBLIC POLICY/PUBLIC ADMINISTRATION (3-0-3)

Study of the administration and implementation of public policies across federal, state, and substate governments. Prerequisite: permission of instructor. Also offered as ADMN 563. Limited enrollment (15). Not offered 1997-98. *Instructor: Stein*

POLI 540(S) INTERNATIONAL RELATIONS (3-0-3)

Core graduate course. Includes an analysis of basic approaches to the study of international relations. Open to qualified undergraduates with permission of instructor. Limited enrollment (15). Not offered 1997-98. *Instructor: Morgan*

POLI 580(S) TOPICS IN AMERICAN POLITICS (3-0-3)

Limited enrollment (15).

POLI 580(F) SEMINAR IN AMERICAN POLITICS (3-0-3)

Not offered 1997-98. Limited enrollment (15).

POLI 591(F) DIRECTED READING-METHODOLOGY (3-0-3)

Instructor: Stevenson

POLI 592(S) DIRECTED READING-METHODOLOGY (3-0-3)

Instructor: Brace

POLI 593(F) DIRECTED READING-AMERICAN

POLI 594(S) POLITICS (3-0-3 each semester)

POLI 595(F) DIRECTED READING-INTERNATIONAL

POLI 596(S) RELATIONS (3-0-3 each semester)

POLI 597(F) DIRECTED READING-COMPARATIVE

POLI 598(S) POLITICS (3-0-3 each semester)

POLI 599 TEACHING POLITICAL SCIENCE (1-0-1)

Preparation for designing and teaching classes at the college level. Prerequisite: graduate standing and permission of instructor. *Instructor: Stoll*

POLI 600 M.A. RESEARCH AND THESIS (hours variable)**POLI 600 TOPICS IN POLITICAL SCIENCE (hours variable)**

Research and thesis for resident students.

POLI 800 PH.D. RESEARCH AND THESIS (hours variable)

Portuguese (PORT)

The School of Humanities/Department of Hispanic and Classical Studies

PORT 101(F) FIRST-YEAR PORTUGUESE (3-1-4)

DISTRIBUTION COURSE: GROUP I

Introduction to the study of the Portuguese language, with emphasis on development of audiolingual skills. Includes language lab work. Must complete PORT 102 to receive credit for PORT 101.

PORT 102(S) FIRST-YEAR PORTUGUESE (3-1-4)

DISTRIBUTION COURSE: GROUP I

Continuation of PORT 101. Prerequisite: PORT 101.

PORT 201(F) SECOND-YEAR PORTUGUESE (3-0-3)

DISTRIBUTION COURSE: GROUP I

PORT 202(S) SECOND-YEAR PORTUGUESE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of PORT 201.

PORT 400 INDEPENDENT STUDY (0-0-3)

Open to qualified students interested in a topic not covered in other courses. By permission of department.

Psychology (PSYC)

The School of Social Sciences

PSYC 101 INTRODUCTION TO PSYCHOLOGY (3-0-3)

Survey of topics, problems, and approaches in contemporary psychology. Includes the biological basis of behavior, sensation, perception, attention, learning and memory, thinking, language, abnormal behavior and therapies, personality and individual differences, child development, and social processes. Required for psychology majors. *Instructor: Laughery*

PSYC 102 READINGS IN PSYCHOLOGY (1-0-1)

Discussion of articles and research reports in psychology. Prerequisite: permission of instructor. Corequisite: PSYC 101. *Instructors: Burnett, Laughery, Schneider*

PSYC 202(F) INTRODUCTION TO SOCIAL PSYCHOLOGY

Overview of topics in social psychology. Includes conformity and social influence, attitude change and the mass media, aggression, altruism, relationships, liking and loving, prejudice and stereotyping, and socialization. Required for psychology majors. Prerequisite: PSYC 101.

PSYC 203(S) INTRODUCTION TO COGNITIVE PSYCHOLOGY

Overview of topics in cognitive psychology. Includes perception, attention, memory, psycholinguistics, thinking and reasoning, problem solving, concept formation, and decision making. Required for psychology majors. Prerequisite: PSYC 101. *Instructor: Bowers*

PSYC 221(F) DEVELOPMENTAL PSYCHOLOGY (3-0-3)

Study of behavioral changes with age and general laws of development in both human and nonhuman species. Prerequisite: PSYC 101.

PSYC 231(S) INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Overview of the principles, techniques, and theories of psychology applied in the industrial setting. Prerequisite: PSYC 101. *Instructor: Dipboye*

PSYC 308(S) MEMORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Critical review of traditional and contemporary approaches to the study of remembering and forgetting. Limited enrollment (50). Prerequisites: PSYC 101 and 203 or permission of instructor.

PSYC 309(S) PSYCHOLOGY OF LANGUAGE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of human and other animal communication. Includes the structure of human language, word meaning and semantic memory, psychological studies of syntax, bilingualism, language and thought, and language errors and disorders. Limited enrollment (50). Prerequisites: PSYC 101 and 203 or permission of instructor. Also offered as LING 309. Offered in alternate years. *Instructor: Martin*

PSYC 315(S) SEMANTICS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Basic approaches to the study of meaning in linguistics and related fields. Topics treated include the cognitive representation of meaning, lexical categorization, conceptual structures, and the relation of language and mind. Prerequisites: LING 200 or permission of instructor. Also offered as LING 315. *Instructor: Kemmer*

PSYC 329(S) PSYCHOLOGICAL TESTING (3-0-3)

Study of techniques for measuring individual differences and a critical review of the theories of individual differences in intelligence and personality. Limited enrollment (50). Prerequisites: PSYC 101 and 339 and permission of instructor. *Instructor: Quiñones*

PSYC 330(F) PERSONALITY THEORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of those aspects of personality emphasized by major theorists past and present. Limited enrollment (50). Prerequisites: PSYC 101 and 202. *Instructor: Dipboye*

PSYC 332(S) ABNORMAL BEHAVIOR (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of reactions to stress, neurotic traits, therapy, depression, and schizophrenia. Includes an eclectic, empirically based exploration of abnormal psychology in the light of research findings. Limited enrollment (50). Prerequisites: PSYC 101 and 202 and permission of instructor. *Instructor: Burnett*

PSYC 339(F) STATISTICAL METHODS-PSYCHOLOGY (3-1-4)

Introduction to quantitative and computer methods applicable to the analysis of experimental data. Limited enrollment (50). Required for psychology majors. Prerequisite: PSYC 101 or permission of instructor. Also offered as STAT 339. *Instructor: Quiñones*

PSYC 340(S) RESEARCH METHODS (3-1-4)

Continuation of PSYC 339, with emphasis on individual student experiments and the writing of research reports. Limited enrollment (50). Required for psychology majors. Prerequisites: PSYC 101 and 339. *Instructor: Watkins*

PSYC 342(F) COMPUTER APPLICATIONS (3-0-3)

Study of the use of small computers in psychological research. Limited enrollment (10). Prerequisite: permission of instructor. *Instructor: Lane*

PSYC 350(F) PSYCHOLOGY OF LEARNING (3-0-3)

Theoretical and empirical explorations into the topic of learning. Includes both historically important theoretical positions and modern perspectives, as well as human and animal research. Limited enrollment (20). Prerequisites: PSYC 101 and 203 or permission of instructor. *Instructors: Brelsford, Burnett*

PSYC 351(F) PSYCHOLOGY OF PERCEPTION (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Overview of the sensory and cognitive processes involved in human vision and audition. Prerequisites: PSYC 101 and 203 or permission of instructor. Offered in alternate years.

PSYC 360(S) THINKING (3-0-3)

Study of the higher mental processes. Includes concept formation, problem solving, decision making, and reasoning. Prerequisites: PSYC 101, 203, 339, and 340 or permission of instructor.

PSYC 362(F) BIOPSYCHOLOGY (3-0-3)

Overview of the neurophysiological correlates of behavior. Prerequisite: PSYC 101. Offered in alternate years. *Instructor: Bowers*

PSYC 411(F) HISTORY OF PSYCHOLOGY (3-0-3)

Survey of the evolution of psychological theory from the Greeks to the present. Includes development of scientific approaches to the study of human thought and behavior. Prerequisites: PSYC 101, 202, and 203. *Instructor: Schneider*

PSYC 440(S) SEMINAR IN ADVANCED GENERAL PSYCHOLOGY (3-0-3)

Discussion of empirically oriented issues drawn from various areas of psychology. Includes extensive reading, with emphasis on a more intensive and mature examination of topics typically discussed in introductory courses. Open to senior psychology majors only. Prerequisite: permission of instructor. Limited enrollment (15). *Instructor: Brelsford*

PSYC 450(F) ANIMAL BEHAVIOR METHODS (3-0-3)

Study of the use of animal behavior as models of various applied human situations. Limited enrollment (5). Prerequisite: permission of instructor. *Instructor: Wright*

PSYC 460(S) THE PSYCHOLOGY OF MOTIVATION (3-0-3)

Study of motives and emotions as causes of behavior. Includes biological motives (e.g., hunger, thirst, and sex), aggression, emotions and emotional expression, individual differences in motivation, and motivation in the workplace. Limited enrollment (50). Prerequisite: PSYC 101, 202, or 203. *Instructor: Quiñones*

PSYC 470(S) ENGINEERING PSYCHOLOGY (3-0-3)

Application of principles of psychology and human performance to the design of modern systems. Limited enrollment (50). Prerequisites: PSYC 101 and 203 or permission of instructor.

PSYC 480 ADVANCED TOPICS IN PSYCHOLOGY (3-0-3)

Intensive examination of a topic of contemporary interest to modern psychologists. May be repeated for credit. Prerequisites: PSYC 101, 202, 203 and permission of instructor.

PSYC 485 SUPERVISED RESEARCH IN PSYCHOLOGY (hours variable)

Supervised empirical research. May be repeated for credit. Open only to psychology majors. Prerequisite: permission of instructor. *Instructor: Brelsford*

PSYC 488 SUPERVISED READING IN PSYCHOLOGY (hours variable)

Supervised reading of books and empirical papers on a topic of mutual interest to students and faculty. May be repeated for credit. Open only to psychology majors. Prerequisite: permission of instructor. *Instructor: Brelsford*

PSYC 499 SENIOR THESIS (hours variable)

Prerequisites: PSYC 101, 339, and 340 and permission of instructor. *Instructor: Brelsford*

PSYC 500(F) MEASUREMENT IN PSYCHOLOGY (3-0-3)

Introduction to the principles of measurement in psychological research. Includes psychophysics and scaling, measurement theory, and test theory.

PSYC 501(F) INTRODUCTION TO PSYCHOLOGICAL STATISTICS (3-0-3)

Introduction to quantitative and computer methods for analyzing experimental data.

PSYC 502(F) ADVANCED PSYCHOLOGICAL STATISTICS I (3-0-3)

Introduction to inferential statistics, with emphasis on analysis of variance and multiple regression. Prerequisite: PSYC 501 or permission of instructor. Also offered as STAT 509.

PSYC 503(S) ADVANCED PSYCHOLOGICAL STATISTICS II (3-0-3)

Continuation of PSYC 502, with emphasis on multiple regression. Includes other multivariate techniques and distribution-free statistics. Prerequisite: PSYC 502 or permission of instructor. Also offered as STAT 510. *Instructor: Lane*

PSYC 504(F) COMPUTER APPLICATIONS IN PSYCHOLOGY (3-0-3)

Introduction to SAS, Hypercard, Excel, Basic, and other software (software varies from semester to semester), using Macintosh computers, with emphasis on data analysis and computer-based experimentation. *Instructor: Lane*

PSYC 507(S) RESEARCH METHODS (3-0-3)

Graduate-level treatment of a wide range of laboratory and field research methodologies. Offered in alternate years. *Instructor: Dipboye*

PSYC 510 TOPICS IN GENERAL PSYCHOLOGY (3-0-3)

Lectures or seminar discussions on topics of broad interest (e.g., discussions of "great books in psychology"). May be repeated for credit.

PSYC 511(F) HISTORY AND SYSTEMS OF PSYCHOLOGY (3-0-3)

Study of the philosophical foundations of psychology, the development of scientific models in the 19th century, 20th-century schools of psychology, and the growth of fields of modern psychology. Offered in alternate years. *Instructor: Schneider*

PSYC 512(S) DECISION MAKING (3-0-3)

Overview of the principal concepts, theories, methods, and evidence associated with human decision functions. Includes examination of both descriptive and normative approaches from behavioral, cognitive, and applied perspectives. Offered every three years.

PSYC 520(F) FOUNDATIONS OF COGNITIVE PSYCHOLOGY (3-0-3)

Introduction to basic topics in cognitive psychology. Includes perception, memory, psycholinguistics, concept formation, problem solving, and decision making. *Instructor: Martin*

PSYC 521(F) PERCEPTION (3-0-3)

Study of how people interpret sensory signals in a meaningful way. Offered every three years.

PSYC 522(F) INFORMATION PROCESSING AND ATTENTION (3-0-3)

Study of such problems as information overload, selective attention, response conflict, and automatic and controlled processing. Offered every three years.

PSYC 523(F) MEMORY AND COGNITION IN ANIMALS (3-0-3)

Lecture, discussion, and laboratory course in learning and behavioral control. Includes the application of conditioning techniques to the study of memory and cognition in animals. Limited enrollment (5). Prerequisite: permission of instructor. *Instructor: Wright*

PSYC 524(F) MEMORY (3-0-3)

Overview of issues and research in remembering and forgetting. Offered in alternate years.

Instructor: Watkins

PSYC 525(S) PSYCHOLINGUISTICS (3-0-3)

Study of the psychology of language. Includes the study of speech perception, reading, syntax, meaning, bilingualism, language and thought, and language errors and disorders. Offered in alternate years. *Instructor: Martin*

PSYC 526(S) ARTIFICIAL INTELLIGENCE AND COGNITIVE SCIENCE (3-0-3)

Study of cognitive processes from the vantage point of the human as a computer, with emphasis on expert systems and their development, parallel distributed processing models, and connectionism. Offered every three years. *Instructors: Lane, Martin*

PSYC 527(F) THINKING (3-0-3)

Study of the higher mental processes. Includes concept formation, problem solving, decision making, and reasoning. Offered every three years.

PSYC 528(S) COGNITIVE NEUROPSYCHOLOGY (3-0-3)

Study of the implications of neuropsychological data for cognitive theory. Offered in alternate years. *Instructors: Bowers, Martin*

PSYC 529 COGNITIVE RESEARCH SEMINAR (1-0-1)

Weekly student-staff seminar on current and recent research about mental phenomena. May be repeated for credit. *Instructor: Martin*

PSYC 530(F) FOUNDATIONS OF I/O PSYCHOLOGY (3-0-3)

Graduate-level introduction to the study of human behavior in the work setting. Prerequisite: permission of instructor. *Instructor: Dipboye*

PSYC 540(S) FOUNDATIONS OF ENGINEERING PSYCHOLOGY (3-0-3)

Introduction to basic topics in engineering psychology. Includes methods of systems analysis, display-control design, mental and physical workload analysis, and environmental factors in human performance.

PSYC 541(S) HUMAN-COMPUTER INTERACTIONS (3-0-3)

Study of effective interface design methodology, interaction modes, hypertext, mental models, visual display characteristics, input devices, and on-line help. *Instructor: Lane*

PSYC 542(F) HUMAN RELIABILITY AND SAFETY (3-0-3)

Examination of human reliability in systems, accident analysis techniques, hazard and risk perception, and safety communications. Offered every three years. *Instructor: Laughery*

PSYC 550(F) FOUNDATIONS OF SOCIAL PSYCHOLOGY (3-0-3)

Review of theories of social psychology, with emphasis on current empirical research.

PSYC 551(S) INDIVIDUAL DIFFERENCES AND PERSONALITY (3-0-3)

Examination of individual differences in motivation, behavior, and cognition. Offered every three years. *Instructors: Dipboye, Schneider*

PSYC 560 PSYCHOLOGY PRESENTATIONS (2-2-3)

Practicum on oral and written psychology presentations. May be repeated for credit. Offered in alternate years.

PSYC 561 TEACHING IN PSYCHOLOGY (3-1-3)

Assistance in the teaching of undergraduate and occasionally graduate courses in psychology. May be repeated for credit.

PSYC 571 FIRST-YEAR PROJECT (0-8-3)

Individual research project undertaken in the first year of the graduate program.

PSYC 572 SECOND-YEAR PROJECT (0-8-3)

Individual research project undertaken during the second year of the graduate program. May be repeated for credit.

PSYC 573 NONTHESIS GRADUATE RESEARCH (hours variable)

Individual research unrelated to first- or second-year project or thesis. May be repeated for credit.

PSYC 600(S) TOPICS IN QUANTITATIVE METHODS (3-0-3)

Discussion of selected topics in quantitative methodology. May be repeated for credit. Offered in alternate years. *Instructors: Lane, Martin*

PSYC 601(S) MULTIVARIATE STATISTICS (3-0-3)

Discussion of multivariate statistics. Includes factor analysis, multiple regression, cluster analysis, multidimensional scaling, discriminate analysis, and structural equations. Offered in alternate years.

PSYC 602(S) PSYCHOMETRICS (3-0-3)

Study of test theory. Includes reliability, validity, scaling, norms, sampling, and factor analysis. Offered in alternate years. *Instructor: Lane*

PSYC 610 ADVANCED RESEARCH SEMINAR (1-0-1)

Weekly lunchtime talk by department graduate students and faculty. May be repeated for credit.

PSYC 620 TOPICS IN COGNITIVE PSYCHOLOGY (3-0-3)

Seminars on special topics in cognitive psychology. May be repeated for credit. Offered in alternate years.

PSYC 621 TOPICS IN MEMORY (3-0-3)

Intensive study of selected topics and theories about memory. May be repeated for credit. *Instructor: Watkins*

PSYC 622(S) PERCEPTUAL ORGANIZATION (3-0-3)

Study of issues concerning how sensory information is shaped into perceptual units, how it is grouped, and how one unit (the figure) is segregated from other units (the ground) for purposes of attention. Offered every three years.

PSYC 623(S) RETRIEVAL PROCESSES IN HUMAN MEMORY (3-0-3)

Study of how information is retrieved from memory. Includes reminiscence and hyperamnesia, the effectiveness of retrieval cues, encoding/retrieval interactions, and implicit retention. Offered every three years.

PSYC 628 MEMORY RESEARCH SEMINAR (1-0-1)

Weekly seminar to discuss recent research in human memory. *Instructor: Watkins*

PSYC 629 PSYCHOLINGUISTICS RESEARCH SEMINAR (1-0-1)

Weekly seminar to discuss recent research in psycholinguistics. *Instructor: Martin*

PSYC 630 TOPICS IN INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY (3-0-3)

Seminar on industrial/organizational psychology. Includes organizational development and change, training, test construction, the utility of personnel procedures, career development, and job analysis. May be repeated for credit. Offered in alternate years.

PSYC 631(S) SOCIAL COGNITION IN ORGANIZATIONS (3-0-3)

Introduction to theory and research in social cognition as it relates to organizational behavior. Offered every three years.

PSYC 632(F) LEADERSHIP: THEORY AND RESEARCH (3-0-3)

Examination of the major psychological approaches to the study of leadership, with emphasis on theory and practice in formal organizations. Offered every three years. *Instructor: Dipboye*

PSYC 633(S) WORK ATTITUDES AND MOTIVATION (3-0-3)

Survey of theory and research regarding attitudes and motivation of individuals within work organizations. Offered every three years.

PSYC 634(S) PERSONNEL SELECTION (3-0-3)

Review of research and theory associated with both objective and subjective methods of selecting personnel in organizations. Offered in alternate years. *Instructor: Dipboye*

PSYC 635(S) THE ASSESSMENT CENTER METHOD (3-0-3)

Advanced graduate-level course on assessment center theory, research, and practice. Prerequisite: PSYC 530. Offered every three years.

PSYC 639 INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY INTERNSHIP (hours variable)

Supervised internship in organizational and/or personnel psychology. May be repeated for credit.

PSYC 640(F) TOPICS IN ENGINEERING PSYCHOLOGY (3-0-3)

Seminars on special topics in engineering psychology. May be repeated for credit. Offered in alternate years. *Instructors: Breilsford, Laughery*

PSYC 649 ENGINEERING PSYCHOLOGY INTERNSHIP (variable)

Supervised internship in engineering psychology. May be repeated for credit. *Instructors: Breilsford, Laughery*

PSYC 651(F) TOPICS IN SOCIAL PSYCHOLOGY (3-0-3)

Seminars in special topics in social psychology. May be repeated for credit. Offered in alternate years. *Instructor: Schneider*

PSYC 652(S) SOCIAL COGNITION (3-0-3)

Discussion of recent research and theory in personal perception and the perception of, and memory for, social events, as well as social/cultural influences in cognitive processes. Offered every three years. *Instructor: Schneider*

PSYC 660(S) PROFESSIONAL ISSUES (hours variable)

Discussion of selected topics on professional matters. Includes grant writing, licensing, and ethics in psychology. Offered every three years. *Instructor: Dipboye*

PSYC 700 THESIS RESEARCH (hours variable)

Research for master's thesis. May be repeated for credit.

PSYC 800 DISSERTATION RESEARCH (hours variable)

Research for doctoral dissertation. May be repeated for credit.

Religious Studies (RELI)

The School of Humanities

RELI 101(F) INTRODUCTION TO THE STUDY OF RELIGION (3-0-3) DISTRIBUTION COURSE: GROUP I

Study of religion through comparative and thematic approaches. Includes a multidisciplinary analysis of the scripture, myth, ritual, art, and ethical teachings of one Western and one non-Western religion, as well as challenges posed by pluralism and secularization, using readings from primary texts and interpretive studies. *Instructors: McKenny, Parsons*

RELI 111(F) INTRODUCTION TO AFRICAN RELIGIONS (3-0-3) DISTRIBUTION COURSE: GROUP I

Introduction to the structures of African religions (indigenous, Christian, and Islamic) through readings. Includes community, cosmology, ritual, ethical values, magic, witchcraft, contribution to nationalism, independence, social change, and the transplantation of African religions in the Americas. *Instructor: Bongmba*

RELI 113(F) INTRODUCTION TO CHRISTIANITY IN AFRICA (3-0-3) DISTRIBUTION COURSE: GROUP I

Introductory examination of the dynamics of African Christianity from the early church to the present. Includes readings in the African church during the patristic era and the colonial period, prophetic movements, nationalism, racial tensions, the role of women, and the emergence of a distinct theological voice. Not offered 1997-98. *Instructor: Bongmba*

RELI 122(S) INTERPRETING THE BIBLE (3-0-3) DISTRIBUTION COURSE: GROUP I

Acquaint students with the principal parts of the Hebrew Bible/Old Testament and provide some exposure to the different ways in which the Bible has been interpreted, from late Antiquity to modern times. Compares a modern-critical reading with early Jewish and Christian, often fanciful, elaborations of the same biblical tales and figures. *Instructor: Henze*

RELI 200(F) THE BIBLE IN WESTERN TRADITION (3-0-3) DISTRIBUTION COURSE: GROUP I

Exploration of the multiple roles the Bible has played in Western culture, with emphasis on the Bible as a factor in communication shifts (media history), as a force in fostering the visual imagination (art history), and as a source of theological ideas impacting social arrangements (social/intellectual history). RELI 200 enrollment limited (10). Also offered as HUMA 107. *Instructor: Kelber*

RELI 202(S) ANCIENT RELIGIONS: FROM BABYLON TO ROME (3-0-3) DISTRIBUTION COURSE: GROUP I

Introduction to the ancient Near Eastern and Mediterranean religious cultures: Babylonia, Assyria, biblical, Hellenistic and rabbinic Judaism, oriental and Hellenistic mystery religions, Roman civic religions, Greek folk religions, Gnosis, Palestinian, Hellenistic, monastic, and institutionalized Christianity. Not offered 1997-98. *Instructor: Kelber*

RELI 211(F) INTRODUCTION TO ASIAN CIVILIZATIONS (3-0-3) DISTRIBUTION COURSE: GROUP I

Introduction to the great cultural traditions of Asia, past and present, with emphasis on evolving religious and philosophical traditions, artistic and literary achievements, and patterns of political, social, and economic change. Also offered as HIST 206 and HUMA 111. *Instructors: Klein, Qian, Smith*

RELI 236(S) CHRISTIAN ETHICS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Survey of the fundamental issues and problems of theological ethics, using Christian and other sources. Includes moral selfhood, moral reasoning, evil, and the relation of religion to morality. Not offered 1997-98. *Instructor: McKenny*

RELI 257(S) PERCEPTIONS OF JEWS AND JUDAISM FROM TACITUS TO TOYNBEE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Comparison of Jewish self-images with perceptions of Jews and Judaism held by the dominant cultures in the West from antiquity through the modern period. Includes Tacitus, Paul, Eusebius, Chrysostom, Halevi, Luther, Modena, Grimmshausen, da Costa, Spinoza, Gluecke of Hamelin, Solomon Maimon, Marx, Freud, Hitler, Kook, Grade, and Toynbee. See also RELI 303. Also offered as HIST 257. Not offered 1997-98. *Instructor: Fishman*

RELI 260(F) RELIGION AND THE SOCIAL SCIENCES (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Introduction to classic and contemporary texts in the social scientific study of religion, with emphasis on cross-cultural issues. Includes Freud, Weber, Durkheim, Berger, Geertz, and Kakar. *Instructor: Parsons*

RELI 262(S) MYSTICISM: TEXTS AND METHODS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Survey of diverse texts (secular and religious, East and West) found in mystical literature, with emphasis on psychological, philosophical, and comparative methods. *Instructor: Parsons*

RELI 264(S) SAINTS, SAGES, AND EXEMPLARS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Examination of saints, sages, and exemplars in various religions from scholarly perspectives. Includes imitation and intercession, tensions between ordinary and extraordinary morality, and the psychological and cultural dynamics of sainthood. See also RELI 432. Not offered 1997-98. *Instructors: McKenny, Parsons*

RELI 266(S) PSYCHOANALYSIS AND RELIGION (3-0-3)**DISTRIBUTION COURSE: GROUP I**

In-depth analysis of pivotal writings on religion in the psychoanalytic tradition (e.g., classical, ego-psychology, and object-relations theory). Includes Freud, Erikson, Winnicott, Kohut, Rizzuto, Meissner, and Kakar. Not offered 1997-98. *Instructor: Parsons*

RELI 280(F) SEARCH FOR GOD IN THE POSTMODERN WORLD (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of forms of theistic religious experience: the Western tradition; past and present cultural and philosophical challenges to traditional religious belief; New Age spirituality; contemporary Christian faith; the struggle for justice and meaning today. *Instructor: Stroup*

RELI 282(S) INTRODUCTION TO CHRISTIANITY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Multidisciplinary exploration of Christian religious experience, belief, and social reality with examples from Africa, the Americas, Asia, and Europe during the last two thousand years. Themes include search for lasting marks of identity amid change and diversity as well as the issue of Christianity's relation to processes of modernization and secularization. No prior background in religious studies required. *Instructors: Bongmba, Stroup*

RELI 286(F) THE REFORMATION AND ITS RESULTS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of theology and church-state issues from the 16th-century Reformation to the 17th century. Includes the Reformation's medieval background, Luther and Calvin, the Catholic Reformation, religious wars, Protestant orthodoxy, Pietist spirituality, Puritanism, and calls for toleration. Also offered as HIST 286. Not offered 1997-98. *Instructor: Stroup*

RELI 291(S) RELIGION AND CULTURE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Introduction to the personal, social, theological, and linguistic aspects of religions, East and West, in the works of Tillich, Eliade, Levi-Strauss, and Freud. Includes an analysis of narrative accounts of religious experience in Augustine, Edwards, and selected texts from the Hindu and Buddhist traditions. Limited enrollment (25). *Instructor: Wyschogrod*

RELI 294(S) RELIGION IN FICTION AND FILM (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Examination of views of the sacred through interreligious encounter from the perspective of recent literary theory and modern and postmodern theology. Includes Graham Greene, Shisako Endo, Yukio Mishima, Thomas Mann, Zora Neale Hurston, Werner Herzog, Satyajit Ray, and Peter Brooks. Limited enrollment (25). Not offered 1997-98. *Instructor: Wyschogrod*

RELI 302(S) JEWISH-CHRISTIAN DIALOGUE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Discussion of the basic questions that appear in interfaith exchange. Includes Jewish and Christian beliefs about God, man, history, evil, and eschatology. Limited enrollment (40). *Instructors: Karff, Kelber*

RELI 303(S) PERCEPTIONS OF JEWS AND JUDAISM FROM TACITUS TO TOYNBEE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Enriched version of RELI 257. May not receive credit for both RELI 257 and RELI 303. Also offered as HIST 357. Not offered 1997-98. *Instructor: Fishman*

RELI 307(F) HISTORY OF CHRISTIANITY: THE FIRST FOUR CENTURIES (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of early Christianity in the context of ancient Mediterranean civilizations. Not offered 1997-98. *Instructor: Kelber*

RELI 308(F) CANONICAL GOSPELS: NARRATIVE AND SOCIAL SETTINGS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Reading of the gospel stories from a literary perspective. *Instructor: Kelber*

RELI 322(F) INTRODUCTION TO BUDDHISM (3-0-3)

Study of the thought, practice, and historical development of Buddhism in India, Tibet, China, and Japan. *Instructor: Klein*

RELI 325(F) BUDDHISM AND THE FEMALE (3-0-3)

Exploration of questions of identity, relationship, and personal change through an examination of Buddhist thought and female symbolism in light of current work on or by women. Not offered 1997-98. *Instructor: Klein*

RELI 328(S) SHAMANS AND PHILOSOPHERS: RELIGION/RITUAL IN ANCIENT TIBET (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of Tibetan culture, formed from Buddhist thought (India) and the Bön tradition (possibly Persia). Includes the way each borrowed from and questioned the other, with emphasis on tensions between the shamanic perspective of early Bön and the philosophical perspective of later Bön and Buddhism, as well as their rituals. Much of this material has never been studied in the West before (may work in Tibetan language for extra credit). Not offered 1997-98.

- RELI 330 INTRODUCTION TO TIBETAN LANGUAGE (3-0-3)**
Study of readings in Tibetan Bön and Buddhist religious texts. Also offered as TIBT 330.
Instructor: Klein
- RELI 334(S) PSYCHOLOGY OF RELIGION (3-0-3)**
DISTRIBUTION COURSE: GROUP I
Examination of significant contemporary problems from a clinical standpoint (e.g., ideas of God, evil, anxiety, guilt, and the therapeutic process). *Instructor: Sanborn*
- RELI 340(F) THEOLOGY IN AFRICA (3-0-3)**
DISTRIBUTION COURSE: GROUP I
Introduction to readings in theological thinking in Africa from the Patristic period to the present. Course will address methodological issues as well as constructive theological work on inculturation and liberation. *Instructor: Bongmba*
- RELI 342(S) 20TH-CENTURY RELIGIOUS MOVEMENTS IN AFRICA (3-0-3)**
DISTRIBUTION COURSE: GROUP I
Study of the religious, sociological, and political factors leading to the rise of religious movements in Africa, as well as missionary and colonial reactions to them. Includes the movements' relationship to indigenous religions, political praxis, and the focus on "this-worldly" salvation in light of political and economic marginality. Prerequisite: permission of instructor. Also offered as ANTH 343. Not offered 1997-98. *Instructor: Bongmba*
- RELI 351(F) ELEMENTARY BIBLICAL HEBREW (3-0-3)**
Study of the grammar and vocabulary needed for reading simple prose texts. Includes approaches to grammar through historical linguistics and comparisons of Hebrew with other northwest Semitic languages. No prior knowledge of Hebrew needed. Also offered as HEBR 351. Not offered 1997-98.
- RELI 352(S) INTERMEDIATE BIBLICAL HEBREW (3-0-3)**
Continuation of RELI 351. Includes the development of vocabulary and grammatical skills through reading biblical prose and poetic texts. Also offered as HEBR 352. Not offered 1997-98. Prerequisite: RELI 351.
- RELI 361(F) LOVE, JUSTICE, AND FRIENDSHIP (3-0-3)**
DISTRIBUTION COURSE: GROUP I
Exploration of the relation of self and other as an ethical issue. Includes friendship, self-sacrifice, tensions between love and justice, altruism and egoism, and mutuality and radical alterity. Prerequisite: previous course work in ethics. Not offered 1997-98. *Instructor: McKenny*
- RELI 362(S) ENVIRONMENTAL ETHICS (3-0-3)**
DISTRIBUTION COURSE: GROUP I
Exploration of the issues and problems of ecology, the environment, and future generations from perspectives of moral theories and religious traditions. Not offered 1997-98. *Instructor: McKenny*
- RELI 364(S) RELIGION, ETHICS, AND VIOLENCE (3-0-3)**
DISTRIBUTION COURSE: GROUP I
Examination of religious and secular efforts to understand, control, and justify violence. Attention to nonviolence and "just war" theories in Christianity, Judaism, and Islam and to realism, international law, moral philosophy, and feminist and critical theories. Focus on war, terrorism, genocide, and capital punishment. Not offered 1997-98. *Instructor: McKenny*

RELI 370(S) FOUNDATIONS OF CLASSICAL JUDAISM (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Introduction to classical Judaism exploring key concepts, themes, and experiences in Jewish thought and life, including covenant, Exodus and Passover, revelation, commandment, the sanctification of life, and learning as a sacred endeavor. Readings from Bible, midrash, biblical commentary, Mishnah and Talmud, prayerbook, Passover, Haggadah, philosophy, and mysticism. Limited enrollment (25). *Instructor: Lobel*

RELI 373(F) DUTIES OF THE HEART: THEMES IN MEDIEVAL JEWISH THOUGHT (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Introduction to medieval Jewish thought, reflecting varied perspectives on Jewish life (rabbinic, philosophical, Sufi-influenced, Hasidic). Topics may include knowledge of God, the purpose of the commandments, the cultivation of inner spirituality, religious experience. Course may also address the nature of esoteric writing, the problem of evil, prophecy and revelation, ethical transformation. No prerequisites. All levels welcome. *Instructor: Lobel*

RELI 374(S) MYSTICISM AND PHILOSOPHY (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Themes in medieval Islamic and Jewish thought. "There was a vein of mysticism running through all of medieval Arabic philosophy" (Israel Efros). Explore the relationship between mystical and philosophical modes of thought in the works of medieval Islamic and Jewish thinkers, e.g., Al-Farabi, Avicenna, Ibn Bajja, Ha-Levi, Ibn Tufayl, al-Ghazzali, Maimonides, and Averroes. *Instructor: Lobel*

RELI 375(F) THE QUEST FOR GOD AND THE GOOD (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Where is God to be found in human life: through the intellect or through experience? What is the aim of human life, and what is the place of God in the good life? Course will provide an introduction to religious thought, exploring the relationship between God and the good, between religion and morality, between intellectual contemplation, religious worship, and moral action. Thinkers to be studied include Plato, Aristotle, Augustine, Maimonides, and Ghazzali. Limited enrollment (25). *Instructor: Lobel*

RELI 383(F) THE DEAD SEA SCROLLS (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Introduction to the world of the Dead Sea Scrolls as a window into the Second Temple Period. Close reading of the scrolls (Community Rule, Damascus Covenant, Temple Scroll) will lead to a discussion of the broader issues during the Second Temple Period. *Instructor: Henze*

RELI 391(F) DEATH AND DYING IN RELIGION AND LITERATURE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Study of death, immortality, resurrection, grief, and mourning in Western and Asian religious traditions and modern and postmodern literature. Includes the Bible, Plato, Augustine, Pascal, St. Theresa of Avila, the Upanishads, and selected Buddhist texts, as well as Tolstoy, Rilke, Kafka, Dickinson, Goyen, Celan, and Jabes. Not offered 1997-98. *Instructor: Wyschogrod*

RELI 393(S) RELIGION, MYTH, AND LANGUAGE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Survey of approaches to myth and language in relation to religious experience and meaning. Includes Feuerbach, Freud, Jung, Tillich, Eliade, Wittgenstein, Heidegger, James, Dewey, Levi-Strauss, and Mary Douglas. *Instructor: Wyschogrod*

RELI 395(S) RELIGION AND ASCETICISM (3-0-3)

DISTRIBUTION COURSE: GROUP I

Exploration of interpretations of the body in selected religious traditions in the context of contemporary analyses of corporeality. Includes the theological meanings of pain, suffering, self-denial, and renunciation of the world. *Instructor: Wyschogrod*

RELI 401(F) INDEPENDENT STUDY (hours variable)

RELI 402(S)

Prerequisite: permission of instructor.

RELI 411(F) INTRODUCTION TO CLASSICAL HEBREW I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Introduction to Hebrew (two semesters) with emphasis on biblical Hebrew (basic grammar and vocabulary), with occasional exercises in modern Hebrew (reading, speaking, and writing skills). Also offered as HEBR 411. *Instructor: Henze*

RELI 412(S) INTRODUCTION TO CLASSICAL HEBREW II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of RELI 411. Also offered as HEBR 412. *Instructor: Henze*

RELI 423(S) AFRICAN MYTHS AND RITUAL (3-0-3)

DISTRIBUTION COURSE: GROUP I

Explore and analyze specific myths and rituals that provide legitimation for community ceremonies and that serve as basis for the negotiation of power and ideology for members within that community. Readings from classic theorists: Gennap and Turner; and contemporary theorists: Werbner, Heusch, Comaroff, and Ray. Also offered as ANTH 423. *Instructor: Bongmba*

RELI 426(S) RELIGION AND LITERATURE IN AFRICA (3-0-3)

DISTRIBUTION COURSE: GROUP I

Analysis of the religious imagination in selected African literary works that address Islam, Christianity, and indigenous religions. Includes the identity crisis of persons and communities implied or explicitly stated in the readings. Not offered 1997-98. *Instructor: Bongmba*

RELI 430(S) RELIGION AND THE MODERN THERAPIES (3-0-3)

Exploration of the fundamental issues and problems generated by the psychology-and-religion movement, with emphasis on the emergence of "psychological religiousness." *Instructor: Parsons*

RELI 432(S) SAINTS, SAGES, AND EXEMPLARS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Enriched version of RELI 264. Not offered 1997-98. *Instructors: McKenny, Parsons*

RELI 446(F) POWER AND POWERLESSNESS IN JEWISH HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of myths of Jews as all-powerful manipulators of international finances, media, and politics and Jews as powerless, from the fall of Jerusalem in 70 C.E. to Israel's formation in 1948. Includes Jewish and Christian use of these myths, their correspondence to Jewish collective behavior through the ages, and Jewish responses (e.g., political, social, and theological) to historical crises from the destruction of the first Temple through the Holocaust. Also offered as HIST 446. Not offered 1997-98. *Instructor: Fishman*

RELI 451(F) PHILOSOPHIES AND THEOLOGIES OF HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of modern thought on the meaning and ultimate direction of history, from its roots in eschatology and Augustine to flowering in progress and historicism. Includes Vico, Lessing, Hegel, Ranke, Burckhardt, Nietzsche, Harnack, Troeltsch, Meinecke, Spengler, Heidegger, Butterfield, Dawson, Schweitzer, Jaspers, and Toynbee. Also offered as HIST 451. *Instructor: Stroup*

RELI 454(F) HISTORY OF CHRISTIANITY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey from the Reformation to the 17th century. Not offered 1997-98. *Instructor: Stroup*

**RELI 456(F) HISTORY OF WESTERN CHRISTIANITY:
REFORMATION TO THE PRESENT (3-0-3)**

Study of spirituality, sociopolitical movements, and intellectual life in the West. Includes Luther, Calvin, Bonhoeffer, Barth, Tillich, Marx, Nietzsche, and Jung. Not offered 1997-98. *Instructor: Stroup*

**RELI 457(F) MODERNITY, ANTIMODERNITY, AND
POSTMODERNITY AS STYLES OF RELIGIOSITY (3-0-3)**

Exploration of the problem of defining "modernity." Includes contemporary sociological and political theory in connection with forms of religiosity. Not offered 1997-98. *Instructor: Stroup*

RELI 462(F) MEDICAL ETHICS AND AMERICAN VALUES I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Discussion of the fundamental themes and issues of medical ethics, with emphasis on their historical development. Limited enrollment (15). Prerequisite: permission of instructor. *Instructors: Heitman, McKenny, Reiser*

RELI 463(S) MEDICAL ETHICS AND AMERICAN VALUES II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of RELI 462, with emphasis on clinical experience. Limited enrollment (15). Prerequisite: RELI 462. *Instructor: Heitman*

RELI 470(S) BUDDHIST WISDOM TEXTS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Indo-Tibetan analyses of theory and practice as discussed in indigenous texts. Emphasis this year on theories of perception in India and Tibet. *Instructor: Klein*

**RELI 471(F) BUDDHIST MEDITATION THEORY: WOMEN AND
MEN (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Study of the meditation practices of India and Tibet. Includes associated theories, visual symbols, literary genres, and cultural assumptions, seen in light of current Euro-American feminist work on religion and in a cross-cultural comparative framework. May work in Tibetan language for extra credit. Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Klein*

**RELI 505(F) HISTORY OF CHRISTIANITY: THE FIRST FOUR
CENTURIES (3-0-3)**

Graduate version of RELI 307. Not offered 1997-98. *Instructor: Kelber*

RELI 506(S) GOSPEL AND TRADITION (3-0-3)

Instructor: Kelber

RELI 508(S) JOHN AND LOGOCENTRISM (3-0-3)

Not offered 1997-98. *Instructor: Kelber*

RELI 509(F) NEW TESTAMENT AND HERMENEUTICS (3-0-3)

Not offered 1997-98. *Instructor: Kelber*

RELI 517(S) PHILOSOPHIES AND THEOLOGIES OF HISTORY (3-0-3)

Graduate version of RELI 451. *Instructor: Stroup*

RELI 518(F) HISTORY OF CHRISTIANITY (3-0-3)

Graduate version of RELI 454. Not offered 1997-98. *Instructor: Stroup*

RELI 519(S) MODERNITY, ANTIMODERNITY, AND POSTMODERNITY AS STYLES OF RELIGIOSITY (3-0-3)

Graduate version of RELI 457. Not offered 1997-98. *Instructor: Stroup*

RELI 520(F) HISTORY OF WESTERN CHRISTIANITY: REFORMATION TO THE PRESENT (3-0-3)

Graduate version of RELI 456. Not offered 1997-98. *Instructor: Stroup*

RELI 523(F) INDEPENDENT STUDY (hours variable)

RELI 524(S)

RELI 530(S) SHAMANS AND PHILOSOPHERS: RELIGION/RITUAL IN ANCIENT TIBET (3-0-3)

Graduate version of RELI 328. Not offered 1997-98.

RELI 532 INTRODUCTION TO TIBETAN LANGUAGE (3-0-3)

Graduate version of RELI 330 and TIBT 330. Prerequisite: one semester Tibetan. *Instructor: Klein*

RELI 538(S) RELIGION AND LITERATURE IN AFRICA (3-0-3)

Graduate version of RELI 426. Not offered 1997-98. *Instructor: Bongmba*

RELI 541(F) SEMINAR IN ETHICS: HISTORY AND METHODS (3-0-3)

Not offered 1997-98. *Instructor: McKenny*

RELI 542(F) LOVE, JUSTICE, AND FRIENDSHIP (3-0-3)

Graduate version of RELI 361. *Instructor: McKenny*

RELI 543(F) MEDICAL ETHICS AND AMERICAN VALUES I (3-0-3)

Graduate version of RELI 462. *Instructors: Heitman, McKenny, Reiser*

RELI 544(S) MEDICAL ETHICS AND AMERICAN VALUES II (3-0-3)

Graduate version of RELI 463. Prerequisite: RELI 543. *Instructor: Heitman*

RELI 545(F) ADVANCED SEMINAR IN BIOMEDICAL ETHICS (3-0-3)

Prerequisites: graduate standing and two semesters of ethics. Not offered 1997-98. *Instructor: McKenny*

RELI 546(S) RELIGION, ETHICS, AND VIOLENCE (3-0-3)

Graduate version of RELI 364. Not offered 1997-98. *Instructor: McKenny*

RELI 547(F) RELIGIOUS ETHICS AND POSTMODERNISM (3-0-3)

Examination of problems posed for religious ethics by social and cultural aspects of postmodernism. Includes liberalism and communitarianism, power and authority, and relativism and objectivism in ethics. Not offered 1997-98. *Instructor: McKenny*

RELI 548(S) COMPARATIVE RELIGIOUS ETHICS (3-0-3)

Exploration of classical and contemporary approaches to religious ethics from cross-cultural and comparative perspectives. Not offered 1997-98. *Instructor: McKenny*

RELI 551(F) INTRODUCTION TO CLASSICAL HEBREW I (3-0-3)

Graduate version of RELI 411 and HEBR 411. *Instructor: Henze*

RELI 552(S) INTRODUCTION TO CLASSICAL HEBREW II (3-0-3)

Graduate version of RELI 412 and HEBR 412. *Instructor: Henze*

RELI 553(F) THE DEAD SEA SCROLLS (3-0-3)

Graduate version of RELI 383. *Instructor: Henze*

RELI 555(S) EMERGENCE OF MODERN POLITICAL THEOLOGY (3-0-3)

Study of cultural criticism and radical bohemianism from historical and religious points of view
Not offered 1997-98. *Instructor: Stroup*

RELI 557(F) DEPARTMENTAL COLLOQUIUM (3-0-3)

RELI 558(S)

RELI 559(F) INTRODUCTION TO HISTORIOGRAPHY OF WESTERN CHRISTIANITY (3-0-3)

Survey of the standard literature and the main problems in interpretation. *Instructor: Stroup*

RELI 560(S) FOUNDATIONS OF CLASSICAL JUDAISM (3-0-3)

Graduate version of RELI 370. *Instructor: Lobel*

RELI 561(F) THE QUEST FOR GOD AND THE GOOD (3-0-3)

Graduate version of RELI 375. *Instructor: Lobel*

RELI 562(S) RELIGION AND ASCETICISM (3-0-3)

Graduate version of RELI 395. *Instructor: Wyschogrod*

RELI 563(F) DUTIES OF THE HEART: THEMES IN MEDIEVAL JEWISH THOUGHT (3-0-3)

Graduate version of RELI 373. *Instructor: Lobel*

RELI 564(S) MYSTICISM AND PHILOSOPHY (3-0-3)

Graduate version of RELI 374. *Instructor: Lobel*

RELI 570(S) BUDDHIST WISDOM TEXTS (3-0-3)

Graduate version of RELI 470. *Instructor: Klein*

RELI 571(F) BUDDHIST MEDITATION THEORY: WOMEN AND MEN (3-0-3)

Graduate version of RELI 471. Not offered 1997-98. *Instructor: Klein*

RELI 572(S) INTRODUCTION TO BUDDHISM (3-0-3)

Graduate version of RELI 322. *Instructor: Klein*

RELI 575(F) BUDDHISM AND THE FEMALE (3-0-3)

Graduate version of RELI 325. Not offered 1997-98. *Instructor: Klein*

RELI 580(S) PSYCHOANALYSIS AND RELIGION (3-0-3)

Graduate version of RELI 266. Not offered 1997-98. *Instructor: Parsons*

RELI 582(S) MYSTICISM: TEXTS AND METHODS (3-0-3)

Graduate version of RELI 262. *Instructor: Parsons*

RELI 584(S) RELIGION AND THE MODERN THERAPIES (3-0-3)

Graduate version of RELI 430. *Instructor: Parsons*

RELI 591(F) DEATH AND DYING IN RELIGION AND LITERATURE (3-0-3)

Graduate version of RELI 391. Not offered 1997-98. *Instructor: Wyschogrod*

RELI 592(F) ISSUES IN RELIGION AND POSTMODERNISM (3-0-3)

Introduction to postmodern analyses of temporality, representation, otherness, difference, desire, errancy, and writing in relation to problems in the philosophy of religion. Includes Hegel, Kierkegaard, Nietzsche, Heidegger, Levinas, Blanchot, Lyotard, Derrida, Kristeva, and Deleuze. Not offered 1997-98. *Instructor: Wyschogrod*

RELI 593(F) RELIGION, MYTH, AND LANGUAGE (3-0-3)

Graduate version of RELI 393. *Instructor: Wyschogrod*

RELI 594(S) TIME AND ETERNITY: FROM AUGUSTINE TO POSTMODERNISM (3-0-3)

Seminar exploring the relation of religion to questions of temporality and eternity, being and becoming, historicity, and presence and absence in the thought of Bergson, Husserl, Heidegger, Derrida, and Lyotard. Includes the historical understanding of time in the philosophies of Plato, Aristotle, Plotinus, Augustine, and Kant as they bear upon these recent philosophies. Not offered 1997-98. *Instructor: Wyschogrod*

RELI 595(F) GOD AND POSTMODERNISM (3-0-3)

Examination of the meanings of postmodernism and their implications for concepts of God, faith, and religious experience. Includes Nietzsche, Bataille, Derrida, Kristeva, Jean-Luc Marion, and Sloterdijk. Not offered 1997-98. *Instructor: Wyschogrod*

RELI 596(F) RELIGION AND ASCETICISM (3-0-3)

Graduate version of RELI 395. Not offered 1997-98. *Instructor: Wyschogrod*

RELI 597(F) NIETZSCHE AND 20TH CENTURY (3-0-3)

Instructor: Wyschogrod

RELI 800 THESIS RESEARCH (hours variable)

Russian (RUSS)

The School of Humanities/Department of German and Slavic Studies

RUSS 101(F) ELEMENTARY RUSSIAN I (3-2-4)

DISTRIBUTION COURSE: GROUP I

Overview of the fundamentals of Russian grammar. Includes pronunciation, reading, oral practice, and translation. Must complete RUSS 102 to receive credit for RUSS 101. *Instructor: Mucha*

RUSS 102(S) ELEMENTARY RUSSIAN II (3-2-4)

DISTRIBUTION COURSE: GROUP I

Continuation of RUSS 101. Prerequisite: RUSS 101. *Instructor: Mucha*

RUSS 103(S) ELEMENTARY RUSSIAN II (6-2-8)

DISTRIBUTION COURSE: GROUP I

Single summer course equivalent to combined RUSS 101 and 102.

RUSS 201(F) INTERMEDIATE RUSSIAN I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the Russian language. Includes a grammar review, reading of selected texts, conversation, and composition. *Instructor: Mucha*

RUSS 202(S) INTERMEDIATE RUSSIAN II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of RUSS 201. *Instructor: Mucha*

RUSS 301(F) CONVERSATION AND COMPOSITION I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the Russian language, with emphasis on composition and conversation. Includes reading of relevant texts. *Instructor: Thompson*

RUSS 302(S) CONVERSATION AND COMPOSITION II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of RUSS 301. *Instructor: Thompson*

RUSS 303 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 305 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 306 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 311 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 312 SURVEY OF RUSSIAN LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Comprehensive survey of Russian literature from the 18th century to the Soviet period. No knowledge of Russian required. Not offered 1997-98. *Instructor: Thompson*

RUSS 320(F) SLAVIC CULTURES: POLISH POETRY IN TRANSLATION (3-0-3)

DISTRIBUTION COURSE: GROUP I

Polish poetry has recently garnered a number of prizes: two Nobel Prizes in 1980 and 1996 and one International Ingersoll Prize in 1995. The three living poets so honored, Czeslaw Milosz, Wislawa Szymborska, and Zbigniew Herbert, will be featured in this course together with other contemporary and 19th-century poets. No knowledge of Polish required. Also offered as SLAV 320. *Instructor: Rybicki*

RUSS 331 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 332 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 341 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 342 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 351(S) TOLSTOY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the major works of Tolstoy. No knowledge of Russian required. *Instructor: Thompson*

RUSS 352(S) DOSTOEVSKY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the major works of Dostoevsky. No knowledge of Russian required. Not offered 1997-98. *Instructor: Thompson*

RUSS 401(F) RUSSIAN STYLISTICS I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Designed to improve the spoken and written language with emphasis on syntactic and idiomatic structures. Weekly papers required. Not offered 1997-98. *Instructor: Thompson*

RUSS 402(S) RUSSIAN STYLISTICS II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of RUSS 401. Not offered 1997-98. *Instructor: Thompson*

RUSS 410 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 411 SPECIAL TOPIC: CONTEMPORARY RUSSIA (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. Also offered as SLAV 411. Not offered 1997-98. *Instructor: Thompson*

RUSS 412(S) POLISH-LITHUANIAN-UKRAINIAN COMMON WEALTH, 16TH-18TH CENTURIES (3-0-3)

DISTRIBUTION COURSE: GROUP I

The culture of Central Europe in the 16th-18th centuries, with particular attention paid to the federalist model of the Polish-Lithuanian-Ukrainian Commonwealth, the treatment of religious minorities, the cultural profile of so-called Sarmatism, and legacies of the Commonwealth for Central and Eastern Europe. No knowledge of Polish required. Also offered as SLAV 412. *Instructor: Koehler*

RUSS 420(F) WOMEN IN RUSSIAN LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

The portrayal of women in major works of Russian literature with particular attention paid to the women writers' presentation of women. No knowledge of Russian required. *Instructor: Thompson*

RUSS 437 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 441 SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 442(F/S) SPECIAL TOPICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Not offered 1997-98.

RUSS 450 INDEPENDENT STUDY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies depending on student interests and the availability of instructors.

Sanskrit (SANS)

The School of Humanities/Department of Linguistics

SANS 301(F) INTRODUCTION TO SANSKRIT I (3-0-3)

DISTRIBUTION COURSE: GROUP I

Also offered as LING 351. Not offered every year. *Instructor: Mitchell*

SANS 302(S) INTRODUCTION TO SANSKRIT II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Also offered as LING 352. Not offered every year. *Instructor: Mitchell*

Slavic Studies (SLAV)

The School of Humanities/Department of German and Slavic Studies

SLAV 101(F) ELEMENTARY SLAVIC LANGUAGE I (3-1-4)

DISTRIBUTION COURSE: GROUP I

Introductory study of a Slavic language other than Russian (i.e., Polish, Czech, Ukrainian) with emphasis on speaking and reading. Must complete SLAV 102 to receive credit for SLAV 101. Not offered 1997-98.

SLAV 102(S) ELEMENTARY SLAVIC LANGUAGE II (3-1-4)

DISTRIBUTION COURSE: GROUP I

Continuation of SLAV 101. Prerequisite: SLAV 101. Not offered 1997-98.

SLAV 242(F) DRAMA I (3-0-3)

May be repeated for credit. Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Mucha*

SLAV 242(S) DRAMA II (3-0-3)

May be repeated for credit. Prerequisite: permission of instructor. Not offered 1997-98. *Instructor: Mucha*

SLAV 320(F) SLAVIC CULTURES: POLISH POETRY IN TRANSLATION (3-0-3)

DISTRIBUTION COURSE: GROUP I

Polish poetry has recently garnered a number of prizes: two Nobel Prizes in 1980 and 1996 and one International Ingersoll Prize in 1995. The three living poets so honored, Czeslaw Milosz, Wislawa Szymborska, and Zbigniew Herbert, will be featured in this course together with other contemporary and 19th-century poets. No knowledge of Polish required. Also offered as RUSS 320. *Instructor: Rybicki*

SLAV 411 SPECIAL TOPIC: CONTEMPORARY RUSSIA (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. No knowledge of Russian required. Also offered as RUSS 411. Not offered 1997-98. *Instructor: Thompson*

SLAV 412(S) POLISH-LITHUANIAN-UKRAINIAN COMMON WEALTH, 16TH-18TH CENTURIES (3-0-3)

DISTRIBUTION COURSE: GROUP I

The culture of Central Europe in the 16th-18th centuries, with particular attention paid to the federalist model of the Polish-Lithuanian-Ukrainian Commonwealth, the treatment of religious minorities, the cultural profile of so-called Sarmatism, and legacies of the Commonwealth for Central and Eastern Europe. No knowledge of Polish required. Also offered as RUSS 412. *Instructor: Koehler*

SLAV 422 CONSERVATIVE AUTHORS AND READINGS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Examination of conservative responses to major modern and postmodern thinkers. Includes Mortimer Adler, Hannah Arendt, Leszek Kolakowski, Czeslaw Milosz, Alexander Solzhenitsyn, Karl Popper, Thomas Molnar, Jacques Maritain, Fyodor Dostoevsky, and Zbigniew Brzezinski. Familiarity with or additional readings in Friedrich Nietzsche, Sigmund Freud, G.W.F. Hegel, and Karl Marx will also be required. Not offered 1997-98. *Instructor: Thompson*

SLAV 436(F) TOPICS IN SLAVIC LINGUISTICS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the Old Church Slavic language in its Indo-European, Balto-Slavic, and Slavic contexts, with emphasis on translation and analysis of representative Glagolitic and Cyrillic texts. Not offered 1997-98.

SLAV 437(S) THE INTERACTION OF GERMAN AND WENDISH (SORBIAN) IN TEXAS (3-0-3)

DISTRIBUTION COURSE: GROUP I

Transliteration and translation of 19th-century manuscripts. Acquaintance with a Slavic language required. Also offered as GERM 422. Not offered 1997-98. *Instructor: Wilson*

SLAV 450 INDEPENDENT STUDY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies depending on student interests and availability of instructors.

Sociology (SOCI)

The School of Social Sciences

SOCI 203(F) INTRODUCTION TO SOCIOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Introduction to the principal concepts, theories, and methods of sociology. Required (normally) for sociology majors. *Instructor: Martin*

SOCI 301(F) SOCIAL INEQUALITY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of the three dimensions of social inequality in the U.S. Includes concepts of caste and class, costs and benefits of various kinds of inequality, tension between democracy and capitalism, equality of opportunity vs. equality of result, and whether or not government can (or should) change the structure of inequality. Limited enrollment. *Instructor: Davidson*

SOCI 306(F) SOCIOLOGY OF GENDER (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the relationship between gender and social role. Includes development of the contemporary sexual division of labor and the process of socialization with reference to family, education, media, and occupations. Limited enrollment. Also offered as WGST 324. *Instructor: Long*

SOCI 308(S) HOUSTON: THE SOCIOLOGY OF A CITY (3-0-3)

DISTRIBUTION COURSE: GROUP II

An approach to urban sociology and an exploration of contemporary social change, using the Houston metropolitan area as a case study. The rise of the "golden buckle on the sunbelt"; economic and demographic transformations since the end of the oil boom; the new immigration and its impact on interethnic relations; the changing politics of education, inequality, inner-city development and regional issues; perspectives on the urban future in a global economy. Guest lectures, field trips. Prerequisite: SOCI 203 or departmental exam. *Instructor: Klineberg*

SOCI 309(F) RACE AND ETHNIC RELATIONS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of historical and contemporary issues and theories of race and ethnic relations in the U.S. The key groups covered: European Americans, African Americans, Native Americans, Asian Americans, and Mexican Americans. Group patterns of assimilation and conflict inform a basic tenet that race and ethnicity are organizing features of society. Limited enrollment. *Instructor: Valenzuela*

SOCI 313(S) DEMOGRAPHY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Introduction to the study of the dynamics of population change. Includes demographic data sources, components of population change, mortality patterns, family planning, the measurement of migrations, and population-economic models. Not offered 1997-98. *Instructor: Smith*

SOCI 317(F) CONTEMPORARY SOCIOLOGICAL THEORY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Discussion course on major recent trends in sociological theory, especially in the writings of Goffman, Habermas, Bourdieu, Foucault, Smith, Calhoun, and Denzin. Includes symbolic interactionism, critical theory, cultural studies, text/discourse/semiotic analyses, feminist theory, and postmodern sociology. *Instructors: Gordon, Long*

SOCI 321(S) CRIMINOLOGY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of types of criminal behavior. Includes theories of crime and juvenile delinquency, with emphasis on the role of police, courts, correction agencies, and other social structures. Fieldwork required. Limited enrollment. Prerequisite: SOCI 203 or departmental exam. *Instructors: Brown, Martin*

SOCI 324(S) THE GOOD SOCIETY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of the linked projects of analyzing social problems, generating critical appraisals of the existing social order, and envisioning a movement toward "the good society." Includes concrete social issues (the family, inequality, and the environment) and more general topics. Prerequisite: SOCI 203 or permission of instructor. Limited enrollment. Not offered 1997-98. *Instructor: Long*

SOCI 331(S) POLITICS AND SOCIETY IN TEXAS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of Texas as a state and as a state of mind. Includes the state's rural roots and urban realities, liberals and conservatives, Democrats and Republicans, and major ethnic groups, as well as the big rich (and the little poor), the rise of the religious right, women in politics, and the struggle over voting rights. Not offered 1997-98. *Instructor: Davidson*

SOCI 333(S) STUDIES IN RACIAL AND ETHNIC IDENTITY: MEXICAN AMERICANS (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Historical and contemporary analyses of Mexican American social identity. Mexican Americans' current political, social, and economic position will be traced back to their unique incorporation experience into the U.S. political economy. Questions of assimilation and marginality inform this experience, the Civil Rights Movement, known in the Southwest as "the Chicano movement," constituting the primary point of departure. Limited enrollment. Also offered as WGST 325. *Instructor: Valenzuela*

SOCI 334(S) SOCIOLOGY OF THE FAMILY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

A gendered analysis of role structure, sexuality, emotional bonds, and the family as a support network in differing forms of contemporary families. The functioning of the family in differing cultures, classes, and lifestyles and its relation to other social institutions. Limited enrollment. Also offered as WGST 325. *Instructor: Valenzuela*

SOCI 336(S) MASS COMMUNICATION (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of the structure, social context, and effects of large-scale impersonal communication directed to dispersed and heterogeneous audiences. Includes such media as television, radio, print, motion pictures, and recordings. Not offered 1997-98.

SOCI 345(F) SOCIOLOGY OF MEDICINE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Overview of the relationships between social factors and health. Includes medicine as a solution and cause of social and individual problems, stress and health, and medicine and health care systems, as well as cross-cultural differences in health, patterns of diseases, and conventional and alternative health policies in other countries. Not offered 1997-98.

SOCI 350(F) SOCIOLOGICAL APPROACHES TO POVERTY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Exploration of the dimensions and causes of poverty in America. Includes comparisons with other Western democracies, individual shortcomings vs. structural barriers to opportunity, the "culture of poverty," the welfare system, racial and ethnic discrimination today vs. 30 years ago, and possible solutions. Not offered 1997-98. *Instructor: Davidson*

SOCI 353(F) CONCEPTIONS OF HUMAN NATURE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Study of contrasting perspectives on human nature in the behavioral sciences. Emphasizes the "paradigm shift" toward a recognition of irreducible freedom and responsibility on the part of human beings as active participants in the construction of social reality. Not offered 1997-98. *Instructor: Klineberg*

SOCI 360(S) TELEVISION IN AMERICAN CULTURE (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Analysis of television as popular discourse. Includes politics, economics, class, gender, age, and other cultural forms. Prerequisite: SOCI 203 or departmental exam. *Instructor: Gordon*

SOCI 367(F) ENVIRONMENTAL SOCIOLOGY (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of public attitudes toward environmental issues and the interaction between technological developments and ecological constraints as they shape the American future. Includes findings of the biennial "Texas Environmental Survey." Not offered 1997-98. *Instructor: Klineberg*

SOCI 370(F) SOCIOLOGY OF EDUCATION (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Analyses of schools as social institutions that reflect, maintain, and perpetuate inequality in society. In a seminar format, contemporary sociological perspectives are brought to bear on the intended and unintended functions and purposes of schooling. Status attainment and social reproduction models provide frameworks for understanding the relation between social class origin, school achievement, and socioeconomic mobility. Limited enrollment. Also offered as EDUC 370. *Instructor: Valenzuela*

SOCI 386(S) SEXUALITY AND THE SOCIAL ORDER (3-0-3)**DISTRIBUTION COURSE: GROUP II**

Examination of ways that societies conceive of and regulate sexuality in their members' lives. Includes sexual value systems, forms of sexual conduct (e.g., the number, identities, objectives, and intimacy/power relations of participants), the changing role of sexuality over the typical life span, sexual communication, the future of sexuality, and AIDS. Prerequisite: SOCI 203 or departmental exam. Also offered as WGST 326. *Instructor: Gordon*

SOCI 390(F) RESEARCH METHODS (3-0-3)

Introduction to sociological methods used in the study of human society. Includes hypothesis formulation and testing, the analysis of quantitative data, field research, sample surveys, historical and comparative approaches, interview and observational techniques, ethical issues in human research. Taught collectively by department faculty. *Instructor: McKeever*

SOCI 395(S) FEMINIST SOCIAL THOUGHT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of feminist theory as critique and reconstruction. Includes Wollstonecraft and de Beauvoir, as well as contemporary debates about equity, difference, knowledge, sexuality, and power. Limited enrollment. Not offered 1997-98. *Instructor: Long*

SOCI 403/404 INDEPENDENT STUDY (hours variable)

Directed reading and essay writing on special subjects. Includes advanced study in subjects from other courses, if desired. May be repeated for credit. Prerequisite: permission of the department.

SOCI 411(F) SOCIAL CHANGE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of social transformation in the U.S. since 1965, with emphasis on changes in the occupational structure and the nature of inequality, and recent immigration and the ethnic transformation of urban America. *Instructor: McKeever*

SOCI 419(S) ADVANCED RESEARCH SEMINAR: HUMAN STATUS BEHAVIOR (3-0-3)

Seminar exploring status display, invidious distinctions in human communities, and the positive and negative functions of status hierarchy. Includes an analysis of novels, movies, survey research data, and ethnographic data. *Instructor: Davidson*

SOCI 421(S) THE CRAFT OF SOCIOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the "work" of sociology. Includes its historical and social origins and development, and its shifting philosophical foundations, methodological refinements, and ethical and political implications, as well as discussion of classic and controversial sociological studies. Required (normally) for sociology majors. *Instructor: Long*

SOCI 425(S) POLITICAL SOCIOLOGY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of ethnic, economic, gender, and religious conflict, the tension between individualism and a quest for community, the influence of money on policy, the "culture wars," the social bases of political parties, and other topics of current interest. Not offered 1997-98. *Instructor: Davidson*

SOCI 430(F) SOCIOLOGY OF RELIGION (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of religious beliefs, symbols, actions, organizations, roles, and various interrelationships between religion and society. Includes new religious movements, secularization, and fundamentalism. Fieldwork required. Limited enrollment. *Instructor: Martin*

SOCI 433(F) SOCIOLOGY OF THE LIFE CYCLE: DEATH AND DYING (3-0-3)

DISTRIBUTION COURSE: GROUP II

Study of the social meanings of death in various cultures. Includes medical and other definitions of death, attitudes toward death and dying, the career of the self in life and death, timing (e.g., too-early, on-time, and too-late deaths), "near-death experiences," the social management of death and dying in organizational settings, changing patterns of dying persons (e.g., causes of death, mortality rates, and demographics), types of death, aging and death, and the implications of changing death patterns. *Instructor: Gordon*

SOCI 441(S) MINORITIES IN THE SCHOOLING PROCESS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Seminar exploring minority academic underachievement from various theoretical perspectives. Includes discussion and analysis of contemporary issues in the undereducation of cultural and linguistic minorities, using current empirical evidence. Not offered 1997-98. *Instructor: Valenzuela*

SOCI 444(F) SEMINAR: CONTEMPORARY ISSUES IN CRIMINAL JUSTICE (3-0-3)

Examination of the complexities of crime and criminal justice in today's society, with emphasis on police response to crime, drugs, and violence. Includes an exploration of accumulated knowledge about what works in controlling crime and the role of the police viewed from policy analysis and management perspectives. Limited enrollment. Not offered 1997-98. *Instructor: Brown*

SOCI 445 SOCIOLOGY OF CULTURE (3-0-3)

DISTRIBUTION COURSE: GROUP II

This course surveys the different sociological approaches to studying culture. Part I focuses on the relationships between culture and social structure, including various theoretical approaches. Part II examines different perspectives on modern culture. Not offered 1997-98. *Instructor: Long*

SOCI 450(S) TOPICS IN THE STUDY OF RELIGION: FUNDAMENTALISM (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of fundamentalist religious institutions, behavior, and thought. Includes fundamentalist attitudes toward, participation in, and impact on politics, economics, education, mass communication, and family life, using Christian, Islamic, and Jewish examples. Fieldwork required. Limited enrollment. *Instructor: Martin*

SOCI 492(S) DIRECTED HONORS RESEARCH (3-0-3)**SOCI 493(F)**

Sociological research under faculty supervision. Includes first-semester review of relevant literature and the preparation of an outline for planned research, followed by second-semester research and the writing of an honors thesis. Open only to students in sociology honors program.

SOCI 496(S) ADVANCED RESEARCH SEMINAR: THE HOUSTON AREA SURVEY (3-1-4)

Continuation of a series of annual surveys on how Houston residents are reacting to changes in American society. Includes sampling procedures, questionnaire construction, interviewing, and data analysis, using the logic and skills of survey research. Culminates in a research report that develops empirical hypotheses and tests their validity with survey findings. Prerequisite: permission of instructor. *Instructor: Klineberg*

Social Sciences (SOSC)

The School of Social Sciences

SOSC 300(S) SOCIAL SCIENCE AND PUBLIC POLICY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Survey of how different disciplines in the social sciences treat public policy. Includes specific policy questions as a means of highlighting each discipline's approach to the study of public policy.

Instructor: Stein

SOSC 301(F) POLICY ANALYSIS (3-0-3)

DISTRIBUTION COURSE: GROUP II

Familiarizes students with the analytical tools necessary for evaluating and analyzing public policies. It is intended to serve as an introductory class to the Policy Studies major. Also offered as POLI 338. *Instructor: Ostdiek*

SOSC 330(S) HEALTH CARE REFORM IN THE 50 STATES (3-0-3)

Examination of those states that have undertaken comprehensive health system reform, have carried out more limited revisions, or have failed to even begin the process, assessing successes and failures. Includes general theories of state-federal relationships and the role of the federal government in state health reform. *Instructor: Rosenau*

SOSC 420(S) HEALTH CARE: COMPETITION AND MANAGED CARE (3-0-3)

Introduction to definition, history, and evolution of managed care and its distinguishing characteristics. Includes managed care and market competition and impact on science in general and medical science in particular, as well as evaluation of how competition and regulation influence the development, assessment, and diffusion of new health technologies within the managed care framework. *Instructor: Rosenau*

SOSC 430(F) THE SHAPING OF HEALTH POLICY (3-0-3)

Study of how health care policy decisions are made and implemented, using an interdisciplinary approach involving government, law, ethics, economics, and history. Includes case discussions of major policy problems by faculty experts in these disciplines and guest speakers who are leading national figures in the shaping of public policy. Not offered 1997-98. *Instructor: Rosenau*

Space Physics and Astronomy (SPAC)

The Wiess School of Natural Sciences

SPAC 201(F) STARS, GALAXIES, AND THE UNIVERSE (3-0-3)

FOUNDATION COURSE: GROUP III

Introductory course in the formation, evolution, and death of stars, the composition and evolution of galaxies, and the structure and evolution of the universe. *Instructor: O'Dell*

SPAC 201(S) STARS, GALAXIES, AND THE UNIVERSE (3-0-3)

FOUNDATION COURSE: GROUP III

Introductory course in the formation, evolution, and death of stars, the composition and evolution of galaxies, and the structure and evolution of the universe. *Instructor: Haymes*

SPAC 202(F) EXPLORATION OF THE SOLAR SYSTEM (3-0-3)

FOUNDATION COURSE: GROUP III

Introductory survey of the structure and energetics of the sun, planetary motions, interplanetary fields and plasmas, the planets, their satellites and rings, and comets. Includes the purposes and methods of manned and unmanned solar system exploration. *Instructor: Haymes*

SPAC 202(S) EXPLORATION OF THE SOLAR SYSTEM (3-0-3)

FOUNDATION COURSE: GROUP III

Introductory survey of the structure and energetics of the sun, planetary motions, interplanetary fields and plasmas, the planets, their satellites and rings, and comets. Includes the purposes and methods of manned and unmanned solar system exploration. *Instructors: Freeman, Reiff*

SPAC 203(S) ATMOSPHERE, WEATHER, AND CLIMATE (3-0-3)

FOUNDATION COURSE: GROUP III

This course emphasizes the fundamental science of the atmospheric system. Among the subjects to be covered quantitatively are climate changes, solar radiation and the Earth's energy budget, atmospheric motions and circulation, clouds and storms, and atmospheric environmental concerns. *Instructor: Few*

SPAC 250(S) INTRODUCTION TO ASTROPHYSICS (3-0-3)

Celestial mechanics; photometric concepts and radiation transfer, structure and evolution of stars, including supernovae and stellar remnants (black holes and neutron stars). Topics such as planetary astronomy and solar system formation may also be explored. This course together with SPAC 360 forms a coherent survey of modern astrophysics. It is intended for students who have at least two semesters each of physics and calculus. *Instructor: Liang*

SPAC 300(S) UNDERGRADUATE SEMINAR (1-0-1)

Technical readings and weekly discussion on important issues in space physics and astronomy. This year's topic is the physics related to hazards in space, particularly space weather, space debris, and radiation. Prerequisites: SPAC 250 and PHYS 202 or permission of instructor. *Instructor: Wolf*

SPAC 330(F) ASTRONOMY LABORATORY (1-3-2)

An introduction to modern techniques of observational astronomy. Students will use telescopes and computer analyze data to determine properties of solar system, galactic, and extragalactic objects. The course also involves field trips to dark-sky observing sites, including George Observatory. Prerequisites: SPAC 250, or one of SPAC 201 and 202, plus permission of the instructor. *Instructor: Dufour*

SPAC 360(S) GALAXIES AND COSMOLOGY (3-0-3)

Morphology, kinematics, and dynamics of galaxies; interstellar matter. Peculiar and interacting systems and galaxy clusters. Active galactic nuclei. Large-scale structures in the universe; cosmological models. Prerequisites: SPAC 250 and PHYS 301 or permission of the instructor.

Instructor: Dufour

SPAC 443(F) ATMOSPHERIC SCIENCE (3-0-3)

This course emphasizes the science of the atmosphere. Subjects studied include radiation, climate dynamics; energy balance models; structure and stability; water, cloud and precipitation physics; atmospheric dynamics; storms and special systems; and atmospheric electricity. Prerequisite: open to upper-level undergraduates and graduate students in science and engineering with permission of instructor. Also offered as ENVI 443. *Instructor: Few*

SPAC 450(F) EXPERIMENTAL SPACE SCIENCE (3-0-3)

Study of instruments and methods used in space physics and astronomy. May include the electromagnetic spectrum, cosmic rays, neutrinos, magnetic fields, and particles in the solar system, as well as discussion of special techniques for remote sensing or for the analysis of massive astronomical data sets. Prerequisites: SPAC 250 and 330 or permission of instructor. Not offered 1997-98. *Instructors: Few, Hartigan, Reiff*

SPAC 470(F) SOLAR SYSTEM PHYSICS (3-0-3)

The sun, solar-terrestrial relationships, solar wind; and planetary atmospheres, ionospheres, and magnetospheres. Prerequisites: SPAC 250 and PHYS 301, 302. *Instructor: Cloutier*

SPAC 480(S) INTRODUCTION TO PLASMA PHYSICS (3-0-3)

Fundamental processes in cosmic and laboratory plasmas: gas dynamics, kinetic theory, magnetohydrodynamics, wave and shocks, individual particle drifts, collisions and electrical conductivities, and geometric and distribution instabilities. Prerequisite: PHYS 302 (or equivalent). *Instructor: Cloutier*

SPAC 500 GRADUATE SEMINAR (1-0-1)

A presentation of current research programs in the department. May be repeated for credit. *Instructors: Chan, Hartigan*

SPAC 505(S) PROCESSES IN COSMIC PLASMAS (3-0-3)

Study of plasma phenomena that occur widely in nature. May include quasi-static equilibrium, magnetic equilibrium, magnetic reconnection, particle acceleration, plasma winds and jets, and interchange instabilities. Prerequisites: SPAC 470 and 480. Not offered 1997-98. *Instructors: Stepinski, Wolf*

SPAC 510(F) MAGNETOSPHERIC PHYSICS (3-0-3)

Introduction to observational knowledge and basic theories concerning the plasma physics of the earth's magnetosphere (e.g., interactions of the magnetosphere with the solar wind, the ionosphere, and the neutral atmosphere), with emphasis on large-scale physics. May include small-scale waves and instabilities affecting large-scale phenomena. Not offered 1997-98. *Instructor: Wolf*

SPAC 512(S) IONOSPHERIC PHYSICS (3-0-3)

Examination of the aeronomy and structure of planetary ionospheres. Includes the aurora, ionospheric currents, and conductivities. Not offered 1997-98.

SPAC 515(F) CLASSICAL DYNAMICS (3-0-3)

Lagrangian and Hamiltonian mechanics; general relativistic mechanics. Also offered as PHYS 515. *Instructor: Michel*

SPAC 516(F) MATHEMATICAL METHODS (3-0-3)

Survey of analytical and numerical methods used by research physicists and astronomers. Includes complex variables, the evaluation of integrals, variational calculus, ordinary and partial differential equations, special functions, and transform methods. Not offered 1997-98.
Instructor: Michel

SPAC 521(S) PLASMA KINETIC THEORY (3-0-3)

Plasma kinetic equations (Klimontovich, Liouville, BBGKY, Balescu-Lenard, Fokker-Planck, Vlasov), Vlasov theory of waves and instabilities, connections to fluid plasma models. Prerequisites: SPAC 480, 515, 532. *Instructor: Chan*

SPAC 522(S) NONLINEAR PLASMA DYNAMICS (3-0-3)

Examination of nonlinear dynamics and nonlinear processes in plasmas. May include Hamiltonian dynamics and perturbation theory, KAM theory, Hamiltonian chaos, area-preserving mappings, the transition to global chaos, dissipative systems, BGK modes, nonlinear fluid waves, parametric instabilities, and the weak turbulence theory. Prerequisite: SPAC 521. Not offered 1997-98.

SPAC 532(S) CLASSICAL ELECTRODYNAMICS (3-0-3)

Special relativity, covariant formulation of electrodynamics, wave phenomena and charged-particle radiation. Also offered as PHYS 532. *Instructor: Wolf*

SPAC 541(F) RADIATIVE PROCESSES (3-0-3)

Application of classical and quantum electrodynamics to radiation phenomena in astrophysics, with emphasis on plasma spectroscopy and diagnostics. Prerequisite: SPAC 532. *Instructor: Weisheit*

SPAC 542(S) NEBULAR ASTROPHYSICS (3-0-3)

Study of the physics of diffuse matter in space. Includes radiative transfer, photoionization and thermal equilibria, gaseous dynamics, and an analysis of the spectra of nebulae, novae, and supernova remnants. Not offered 1997-98.

SPAC 551(F) ASTROPHYSICS I: SUN AND STARS (3-0-3)

Physics of stellar interiors and atmospheres, solar phenomena. Concepts of stellar evolution. *Instructor: Liang*

SPAC 552(S) ASTROPHYSICS II: GALAXIES AND COSMOLOGY (3-0-3)

The physics of interstellar matter; structure of the Milky Way and other, normal galaxies; physical cosmology and high-redshift phenomena. *Instructor: O'Dell*

SPAC 561(F) GENERAL RELATIVITY (3-0-3)

Study of Einstein's theory of gravitation and gravity waves. Includes relativistic cosmological models. Prerequisite: SPAC 532. Not offered 1997-98.

SPAC 565(S) COMPACT OBJECTS (3-0-3)

Selected topics involving white dwarfs, neutron stars, black holes and their environments, e.g., pulsars, supernova remnants, and accretion disks. *Instructor: Michel*

The SPAC 600-605 graduate seminars are not offered every year. These advanced seminars, which treat subjects of departmental interest, in the past have discussed atmospheric dynamics, globular clusters, experimental plasma physics, the origin of the solar system, kinetic theory, cosmo-chemistry, and Venus and Mars. As topics change, seminars may be repeated for credit.

SPAC 700 TEACHING PRACTICUM (hours variable)

Open to graduate students in space physics and astronomy.

SPAC 800 GRADUATE RESEARCH (hours variable)

Open to graduate students in space physics and astronomy.

Spanish (SPAN)

The School of Humanities/Department of Hispanic and Classical Studies

SPAN 101 FIRST-YEAR SPANISH (3-1-4)

DISTRIBUTION COURSE: GROUP I

Introduction to the Spanish language. Course aims to promote communicative and cultural competence by developing basic proficiency in listening, speaking, reading, and writing. Prerequisite: placement or permission of coordinator. Lab work required.

SPAN 102 FIRST-YEAR SPANISH (3-1-4)

DISTRIBUTION COURSE: GROUP I

Continuation of SPAN 101. Prerequisite: SPAN 101, placement, or permission of coordinator.

SPAN 103(F) ACCELERATED BEGINNING SPANISH (6-2-8)

DISTRIBUTION COURSE: GROUP I

One-semester course equivalent to combined SPAN 101 and 102, with emphasis on achieving proficiency in spoken Spanish. Includes five classes a week and a language lab twice a week. Prerequisite: Placement or permission of coordinator. *Instructors: Gargallo, Hansz*

SPAN 201 SECOND-YEAR SPANISH (3-1-4)

DISTRIBUTION COURSE: GROUP I

Course uses stories, films, TV shows, and other materials for continued development of communicative and cultural competence. Thorough grammar review. Lab work required. Prerequisite: SPAN 101-102, 103, placement, or permission of coordinator.

SPAN 202 SECOND-YEAR SPANISH (3-1-4)

DISTRIBUTION COURSE: GROUP I

Continuation of SPAN 201. Prerequisite: SPAN 201, placement, or permission of coordinator.

SPAN 204(S) ACCELERATED INTERMEDIATE SPANISH (6-2-8)

DISTRIBUTION COURSE: GROUP I

Continuation of SPAN 103. One-semester course equivalent to combined SPAN 201 and 202. Prerequisite: SPAN 101-102, 103, placement, or permission of coordinator. *Instructors: Gargallo, Hansz*

SPAN 304(S) LATIN AMERICAN LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of selected works of outstanding writers from Latin America. All readings and class discussions in English. Open to all students. Not offered 1997-98. *Instructor: Rea*

SPAN 305(F) INTERMEDIATE SPANISH: LEGAL AND COMMERCIAL (3-0-3)

Introduction to general Spanish business and legal practices and terminology for use in subsequent business or legal careers. Prerequisite: second-year competency or permission of instructor. *Instructor: Kiperman*

SPAN 306(S) INTERMEDIATE SPANISH: MEDICAL (3-0-3)

Introduction to general Spanish medical terminology and the reading of medical texts and journals for use in subsequent medical careers. Prerequisite: second-year competency or permission of instructor. *Instructor: Kiperman*

SPAN 311(F) ADVANCED SPANISH (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Course aims to improve students' communicative competence in Spanish, with emphasis on reading, composition, conversational strategies, vocabulary expansion, and grammar review. Prerequisite: SPAN 202, placement, or permission of coordinator.

SPAN 312(S) ADVANCED SPANISH (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Continuation of SPAN 311. Prerequisite: SPAN 311, placement, or permission of coordinator.

SPAN 315(F) STUDIES IN HISPANIC LINGUISTICS (3-0-3)

Content varies from year to year. Topics include the history of the Spanish language, Old Spanish, and Spanish American dialectology. Also offered as LING 424. Not offered 1997-98. *Instructor: Urrutibéheity*

SPAN 316(S) STUDIES IN HISPANIC LINGUISTICS (3-0-3)

Continuation of SPAN 315.

SPAN 318(F) ADVANCED CONVERSATION AND COMPOSITION (3-0-3)

Study and practice in Spanish, with emphasis on vocabulary acquisition and the development of communicative competence. Includes discussion of the conversational strategies of Spanish native speakers. Prerequisite: second-year competency. Offered only as part of the Fall Semester in Chile. *Instructor: Rea*

SPAN 319(F) SURVEY OF SPANISH LITERATURE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Survey of the history of Spanish literature. Includes representative readings from the medieval period to 1700, with emphasis on stylistic analysis. Not offered 1997-98. *Instructor: Pérez*

SPAN 320(S) SURVEY OF SPANISH LITERATURE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Continuation of SPAN 319. Includes representative readings from 1700 to the present, with emphasis on stylistic analysis. *Instructor: Pérez*

SPAN 321(F) SURVEY OF SPANISH AMERICAN LITERATURE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Survey of Spanish American literature from the colonial period to modernism. Includes representative readings from major literary figures. *Instructor: van Delden*

SPAN 322(S) SURVEY OF SPANISH AMERICAN LITERATURE (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Continuation of SPAN 321. Survey of Spanish American literature from modernism to the present. Includes representative readings from major literary figures. *Instructor: van Delden*

SPAN 323(F) HISPANIC CULTURE AND CIVILIZATION (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Lectures, class discussions, slide presentations, and films will be used in this diachronic study of institutions, figures, and works that contributed decisively to the making of Spain. *Instructor: Castañeda*

SPAN 324(S) CULTURE AND CIVILIZATION OF LATIN AMERICA (3-0-3)**DISTRIBUTION COURSE: GROUP I**

Exploration of the development of the cultural, social, and political thought and institutions of Latin America by way of readings, lectures, films, discussion, and essays. *Instructor: Rea*

SPAN 341(F) MODERN SPANISH LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May include the Spanish Enlightenment, the Generation of '98, the works of Miguel de Unamuno, or the works of Antonio Machado. For fall 1997: Generation of '98. *Instructor: Kauffmann*

SPAN 342(S) MODERN SPANISH LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May include the Romantics, 19th-century Spanish fiction, contemporary Spanish lyric poetry, and the Spanish novel in the 20th century. For spring 1998: contemporary novel. *Instructor: Pérez*

SPAN 352(F) ADVANCED SPANISH COMPOSITION (3-0-3)

Use of literary texts and current periodicals to strengthen written rhetorical skills. Not offered 1997-98.

SPAN 361(F) STUDIES IN GOLDEN AGE DRAMA (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the development of the *comedia* in Spain. Includes Lope de Vega, Tirso de Molina, Ruiz de Alarcón, and other 17th-century playwrights. Content varies from year to year. *Instructor: Castañeda*

SPAN 362(S) GOLDEN AGE DRAMA (3-0-3)

DISTRIBUTION COURSE: GROUP I

Continuation of SPAN 361. Includes Calderón de la Barca, Moreto, Rojas Zorrilla, and other 17th-century playwrights. *Instructor: Castañeda*

SPAN 381(F) PROSE AND LYRIC POETRY OF THE GOLDEN AGE (3-0-3)

Analysis of Spanish poetry and prose, with emphasis on Cervantes' *Don Quijote, Part I*. Also includes the development of lyric poetry from Garcilaso to Góngora and the picaresque novel. Offered in alternate years. Not offered 1997-98. *Instructor: Castañeda*

SPAN 382(S) PROSE AND LYRIC POETRY OF THE GOLDEN AGE (3-0-3)

Continuation of SPAN 381, with emphasis on Cervantes' *Don Quijote, Part II* and on the development of the baroque. Offered in alternate years. Not offered 1997-98. *Instructor: Castañeda*

SPAN 403(F) ADVANCED SPANISH THROUGH MEDIA (3-0-3)

Use of selected Spanish-language films viewed in class to develop topics for oral expression, with emphasis on perfecting listening comprehension and speaking ability. For advanced undergraduates. Not offered 1997-98. *Instructor: Daichman*

SPAN 405(F) STUDIES IN SPANISH LITERATURE (3-0-3)

DISTRIBUTION COURSE: GROUP I

Section 1: Study of contemporary Latin American theater from Argentina, Chile, Peru, Mexico, and the Caribbean. Includes Osvaldo Dragun, Emilio Carballido, Egon Wolff, Griselda Gambaro, Mario Vargas-Llosa, and others. May be repeated for credit. Offered only as part of the Fall Semester in Chile program. *Instructor: Rea*

Section 2: For fall 1997: Study of important 20th-century Mexican novels, including works by Mariano Azuela, Martín Luis Guzmán, Agustín Yáñez, Juan Rulfo, Carlos Fuentes, Rosario Castellanos, Elena Poniatowska, Angeles Mastretta, and José Agustín. May be repeated for credit. *Instructor: van Delden*

SPAN 406(S) STUDIES IN SPANISH LITERATURE (3-0-3)

Topic for spring 1998: Contemporary Latin American women writers. A study of the works of outstanding women writers from Latin America, including Brazil. Some of the authors studied include Clarice Lispector, Lygia Fagundes-Telles, Rosario Castellanos, Rosario Ferre, Isabel Allende, Griselda Gambaro, and Sandra Cisneros. Topics vary. May be repeated for credit. *Instructor: Rea*

SPAN 418(S) MEDIEVAL SPANISH LITERATURE (3-0-3)

Study of three medieval masterpieces: *Cantar de mio Cid*, *Libro de buen amor*, and *La Celestina*. Not offered 1997-98.

SPAN 420(S) LITERARY SEMIOTICS (3-0-3)

Application of semiotic models to the study of literature. Content varies from year to year. Not offered 1997-98. *Instructor: Kauffmann*

SPAN 421(F) INDEPENDENT WORK (3-0-3)**SPAN 422(S)**

Research in Hispanic literature, Hispanic linguistics, and Hispanic culture and civilization. Open to qualified juniors and seniors interested in a topic not covered in other courses. Prerequisite: permission of department.

SPAN 423(F) LINGUISTIC STRUCTURE OF SPANISH (3-0-3)

Synchronic study of modern Spanish phonology and syntax, with emphasis on Hispanic American variants. Open to graduate students for credit. Also offered as LING 423. Not offered 1997-98. *Instructor: Urrutibéheity*

SPAN 424(S) LINGUISTIC STRUCTURE OF SPANISH (3-0-3)

Synchronic study of modern Spanish morphology and syntax, with emphasis on Hispanic American variants. Open to graduate students for credit. *Instructor: Urrutibéheity*

SPAN 435(F) PRACTICUM IN CONSECUTIVE INTERPRETATION (3-0-3)

Intensive practice in Spanish-English interpretation for native speakers of English. The emphasis for native speakers of Spanish is on English-to-Spanish consecutive interpretation. *Instructor: Daichman*

SPAN 436(S) PRACTICUM IN SIMULTANEOUS INTERPRETATION (3-0-3)

Intensive practice in Spanish-English interpretation for native speakers of English. The emphasis for native speakers of Spanish is on English-to-Spanish simultaneous interpretation. *Instructor: Daichman*

SPAN 450(S) HISPANIC DRAMA PRACTICUM (4-0-4)

Critical reading and performance of modern Spanish and Latin American plays. Prerequisite: permission of instructor. Not offered 1997-98.

SPAN 470(S) COMPARATIVE STUDIES IN LITERATURE AND THEORY (3-0-3)

Comparative analysis of modern (e.g., post-Renaissance) literary genres, modes, movements, influences, and authors across two or more cultures, primarily English, Spanish, French, and German speaking, in relation to broader cultural discourses. Includes major critical theories, schools, and methods, other arts and media (e.g., painting and film), and other disciplines (e.g., philosophy, anthropology, linguistics, and cultural studies). Topics vary. Topic for Spring 1998: TBA. Taught in English. *Instructor: Kauffmann*

SPAN 503(F) LINGUISTIC STRUCTURE OF SPANISH (3-0-3)

Graduate version of SPAN 423. Not offered 1997-98.

SPAN 504(S) LINGUISTIC STRUCTURE OF SPANISH (3-0-3)

Graduate version of SPAN 424. *Instructor: Urrutibéheity*

SPAN 507(F) TEACHING COLLEGE SPANISH (2-0-2)

Study of teaching methods and techniques, test preparation, and evaluation. Includes one hour per week of discussion, observation of language classes for three weeks, and three weeks of teaching. Not offered 1997-98. *Instructor: Urrutibéheity*

SPAN 511(S) METHODS OF RESEARCH IN HISPANIC LITERATURE (3-0-3)

Study in literary theory and practice, with emphasis on techniques of stylistic and linguistic analysis and on the bibliographical resources in the field. Open to beginning graduate students. Not offered 1997-98.

SPAN 515(F) STUDIES IN HISPANIC LINGUISTICS (3-0-3)

Graduate version of SPAN 315. Not offered 1997-98.

SPAN 516(S) STUDIES IN HISPANIC LINGUISTICS (3-0-3)

Graduate version of SPAN 316. Not offered 1997-98.

SPAN 518(S) STUDIES IN MEDIEVAL SPANISH LITERATURE (3-0-3)

Graduate version of SPAN 418. Not offered 1997-98.

SPAN 520(S) STUDIES IN LITERARY SEMIOTICS (3-0-3)

Graduate version of SPAN 420. Not offered 1997-98.

SPAN 523(F) STUDIES IN GOLDEN AGE THEATRE (3-0-3)

Graduate version of SPAN 361. *Instructor: Castañeda*

SPAN 524(S) STUDIES IN GOLDEN AGE THEATRE (3-0-3)

Graduate version of SPAN 362. Continuation of SPAN 523. *Instructor: Castañeda*

SPAN 525(F) PROSE AND LYRIC POETRY OF THE GOLDEN AGE: DON QUIJOTE (3-0-3)

Graduate version of SPAN 381. Offered in alternate years. Not offered 1997-98.

SPAN 526(S) PROSE AND LYRIC POETRY OF THE GOLDEN AGE: DON QUIJOTE (3-0-3)

Graduate version of SPAN 382. Continuation of SPAN 525. Offered in alternate years. Not offered 1997-98.

SPAN 535(F) THE SPANISH ESSAY, FROM 1700 TO THE PRESENT (3-0-3)

Readings from major Spanish essayists (e.g., Feijóo, Cadalso, Jovellanos, Larra, Azórin, Unamuno, Ortega y Gasset, Zambrano, Tierno Galván, Savater, Subirats). Scope and focus will vary. Not offered 1997-98. *Instructor: Kauffmann*

SPAN 541(F) STUDIES IN MODERN SPANISH LITERATURE (3-0-3)

Graduate version of SPAN 341. *Instructor: Kauffmann*

SPAN 542(S) MODERN SPANISH LITERATURE (3-0-3)

Graduate version of SPAN 342. *Instructor: Pérez*

SPAN 555(F) STUDIES IN LATIN AMERICAN LITERATURE (3-0-3)

Graduate version of SPAN 405. Topics vary. May be repeated for credit. *Instructor: van Delden*

SPAN 556(S) STUDIES IN SPANISH AMERICAN POETRY (3-0-3)

Graduate version of SPAN 406. Topics vary. May be repeated for credit. *Instructor: Rea*

SPAN 570(S) COMPARATIVE STUDIES IN LITERATURE AND THEORY (3-0-3)

Graduate version of SPAN 470. *Instructor: Kauffmann*

SPAN 591(F) INDEPENDENT STUDY (hours variable)**SPAN 592(S)**

Research in Hispanic literature, Hispanic linguistics, and Hispanic culture and civilization. Open to graduate students interested in a topic not covered in other courses. Prerequisite: permission of department.

SPAN 610(F) TOPICS IN LANGUAGE METHODOLOGY (3-1-4)

Exploration and analysis of a range of theories, issues, and problems in foreign language instruction. Areas of inquiry include the nature of language acquisition, pedagogical methods, instructional technologies, development of teaching materials, and testing/assessment. Offered every year. Required course for all graduate language teaching assistants. Also offered as FREN 610, GERM 510, and LING 610. *Instructor: Kecht*

SPAN 701(F) RESEARCH LEADING TO CANDIDACY (hours variable)

Research in Spanish and Latin American literary theory and Spanish linguistics.

SPAN 702(S) RESEARCH LEADING TO CANDIDACY (hours variable)

Taken after students have completed departmental course requirements for the master's degree but before being admitted to candidacy.

SPAN 801(F) RESEARCH FOR M.A. THESIS (hours variable)**SPAN 802(S)**

Statistics (STAT)

The George R. Brown School of Engineering

STAT 280 ELEMENTARY APPLIED STATISTICS (2-2-4)**DISTRIBUTION COURSE: GROUP III**

Introduction to statistical methods, with emphasis on techniques. Includes computer-assisted data analysis in lab sessions.

STAT 300(S) MODEL BUILDING (3-0-3)**DISTRIBUTION COURSE: GROUP III**

Study of examples to illustrate the mathematical formulation (modeling) of scientific problems, their solution, and their interpretation. Required (normally) for statistics majors. Prerequisite: MATH 211 or permission of instructor.

STAT 305(S) INTRODUCTION TO STATISTICS FOR BIOSCIENCES (3-1-4)

Introduction to statistical models and data analysis techniques. Includes an exploration of computer-assisted data analysis with biological examples in lab sessions. *Instructor: Kimmel*

STAT 310 PROBABILITY AND STATISTICS (3-0-3)

Study of probability theory and the central concepts and methods of statistics. Required (normally) for statistics majors. MATH 212 recommended. Prerequisite: MATH 102. Also offered as ECON 382.

STAT 339(F) STATISTICAL METHODS—PSYCHOLOGY (3-1-4)

Introduction to quantitative and computer methods applicable to the analysis of experimental data. Limited enrollment (50). Required for psychology majors. Prerequisite: PSYC 101 or permission of instructor. Also offered as PSYC 339. *Instructor: Quiñones*

STAT 381 INTRODUCTION TO APPLIED PROBABILITY (3-0-3)

Survey of the concepts, interpretations, elementary techniques, and applications of modern probability theory. Prerequisite: MATH 102. Also offered as CAAM 381 and ELEC 331. *Instructor: Pfeiffer*

STAT 400(S) ECONOMETRICS (3-0-3)

Survey of estimation and forecasting models. Includes multiple regression time series, contingency table analysis, and Bayesian inference. Required for mathematical economic analysis majors. Prerequisite: ECON 382 (STAT 310) or STAT 381. Also offered as ECON 400. *Instructor: Chang*

STAT 410(S) INTRODUCTION TO STATISTICAL COMPUTING AND REGRESSION (3-0-3)

Survey of statistical methods, with emphasis on computing and computing environments. Includes applied regression. Prerequisite: STAT 310 or permission of instructor. *Instructor: Scott*

STAT 420(F) QUALITY AND PROCESS CONTROL FROM AN EXPERIMENTAL DESIGN PERSPECTIVE (3-0-3)

Examination of the historical development of quality control. Includes the approaches of Ford, Pareto, Shewhart, Deming, Box, and Taguchi. Prerequisite: STAT 310 or permission of instructor. *Instructor: Thompson*

STAT 421(S) INTRODUCTION TO TIME SERIES ANALYSIS (3-0-3)

Introduction to time series modeling and forecasting. Prerequisite: STAT 310 or permission of instructor. Also offered as ELEC 432. *Instructor: Cox*

STAT 431(F) MATHEMATICAL STATISTICS I (3-0-3)

Study of advanced distribution theory. Includes moments, cumulants and generating functions, characteristic functions, systems of distribution, mixture models, multivariate distributions, sampling distributions, order statistics, distribution of quadratic forms, and asymptotic distributions. Prerequisite: STAT 310 or permission of instructor. *Instructor: Ensor*

STAT 432(S) MATHEMATICAL STATISTICS II (3-0-3)

Study of the foundations of statistical inference. Includes the theory of point estimation, set estimation, hypothesis testing, linear models, asymptotics, decision theory, and Bayesian theory. Prerequisite: STAT 431. *Instructor: Ensor*

STAT 490(F) INDEPENDENT STUDY (3-0-3 each semester)**STAT 491(S)****STAT 503(S) TOPICS IN METHODS AND DATA ANALYSIS (3-0-3)**

Study of applications of least squares and general linear model. Limited enrollment (15). Also offered as POLI 503. *Instructor: Brace*

STAT 509(F) ADVANCED PSYCHOLOGICAL STATISTICS I (3-0-3)

Introduction to inferential statistics, with emphasis on analysis of variance and multiple regression. Prerequisite: PSYC 501 or permission of instructor. Also offered as PSYC 502.

STAT 510(S) ADVANCED PSYCHOLOGICAL STATISTICS II (3-0-3)

Continuation of STAT 509, with emphasis on multiple regression. Includes other multivariate techniques and distribution-free statistics. Prerequisite: PSYC 502 or permission of instructor. Also offered as PSYC 503. *Instructor: Lane*

STAT 531(F) MATHEMATICAL STATISTICS I

Graduate version of STAT 431. Includes advanced problem sets. Required for graduate students in statistics. Prerequisite: STAT 310 or permission of instructor. *Instructor: Ensor*

STAT 532(S) MATHEMATICAL STATISTICS II (3-0-3)

Graduate version of STAT 432. Includes advanced problem sets. Required for graduate students in statistics. Prerequisite: STAT 531. *Instructor: Ensor*

STAT 533(F) ADVANCED STATISTICAL INFERENCE (3-0-3)

Overview of measure-theoretic probability, the foundations of statistical inference, decision theory, Bayesian theory, the theory of point estimation, set estimation, hypothesis testing, linear models, and asymptotics. STAT 581 recommended. Prerequisites: STAT 431, MATH 321, and either MATH 355 or CAAM 310 or permission of instructor. *Instructor: Cox*

STAT 540(F) ASYMPTOTICS (3-0-3)

Study of modes of convergence, asymptotic theory for nonparametric and parametric inference, asymptotic relative efficiency, U-statistics, Von-Mises statistics, and M, L, and R estimates. Prerequisite: STAT 431 or permission of instructor. Not offered every year.

STAT 541(F) MULTIVARIATE ANALYSIS (3-0-3)

Study of multivariate normal theory, principal components, factor analysis, discrimination, and hypothesis testing. Prerequisite: STAT 431 or permission of instructor. Not offered every year.

The following STAT 540-550 courses are not offered every year; the prerequisite for all courses is STAT 431 or permission of instructor.

STAT 542 SIMULATION (3-0-3)

Instructor: Thompson

STAT 543 ADVANCED TOPICS-STATISTICAL COMPUTING (3-0-3)**STAT 544 SAMPLING THEORY (3-0-3)****STAT 545 GENERALIZED LINEAR MODELS (3-0-3)****STAT 546 DESIGN AND ANALYSIS OF EXPERIMENTS (3-0-3)****STAT 550(F) NONPARAMETRIC FUNCTION ESTIMATION (3-0-3)****STAT 551(S) TIME SERIES ANALYSIS (3-0-3)****STAT 552(S) APPLIED STOCHASTIC PROCESSES (3-0-3)****STAT 553 SURVIVAL ANALYSIS (3-0-3)**

Study of nonparametric methods for analysis of survival data with medical applications.

STAT 554 ROBUST METHODS (3-0-3)**STAT 555 TOPICS IN POPULATION DYNAMICS (3-0-3)****STAT 556 QUALITY CONTROL AND RELIABILITY (3-0-3)****STAT 557 BAYESIAN FOUNDATIONS OF STATISTICAL INFERENCE (3-0-3)****STAT 581(F) MATHEMATICAL PROBABILITY I (3-0-3)**

Introduction to the measure-theoretic foundations of probability. Open to qualified undergraduates and students who need access to advanced mathematical literature in probability and random processes. Also offered as CAAM 581. *Instructor: Pfeiffer*

STAT 582(S) MATHEMATICAL PROBABILITY II (3-0-3)

Continuation of STAT 581. Also offered as CAAM 582. *Instructor: Pfeiffer*

STAT 583(F) INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS (3-0-3)

Review of basic probability and the formulation, analysis, representations, and applications of some standard random processes. Includes sequence of random variables, random vectors and estimation, basic concepts of random processes, random processes in linear systems, expansion of random processes, wiener filtering, spectral representation of random processes, and white-noise integrals. Also offered as CAAM 583 and ELEC 533. *Instructor: Aazhang*

STAT 584(S) ESTIMATION THEORY (3-0-3)

Study of maximum likelihood and Bayesian vector parameter estimation, minimum mean square error estimation, and time series analysis. Includes algorithms based on state variable and ARMA models for signal estimation, model identification, and spectral estimation. Also offered as ELEC 534 and CAAM 584. Not offered 1997-98.

STAT 590(F) INDEPENDENT STUDY (3-0-3 each semester)**STAT 591(S)****STAT 600 GRADUATE SEMINAR IN STATISTICS (hours variable)**

Instructors: Baggerly, Ensor

STAT 604(F) ADVANCED ECONOMIC STATISTICS (3-0-5)

Instruction in statistical inference and the testing of hypotheses. Includes multiple and partial correlation analysis and analysis of variance and regression. Also offered as ECON 504.

STAT 610(S) ECONOMETRICS I (3-6-5)

Study of estimation and inference in single equation regression models, multicollinearity, autocorrelated and heteroskedastic disturbances, distributed lags, asymptotic theory, and maximum likelihood techniques, with emphasis on the ability to analyze the literature critically. Prerequisite: ECON 504. Also offered as ECON 510. *Instructor: B. Brown*

STAT 611(F) ECONOMETRICS II (3-6-5)

Continuation of STAT 610. Includes linear and nonlinear simultaneous equations estimation, qualitative and categorical dependent variables models, and duration analysis, with applied exercises using SAS and the Wharton Quarterly Econometric Model. Also offered as ECON 511. Prerequisite: ECON 510. *Instructor: Sickles*

STAT 680 through STAT 689 are seminars on advanced topics in statistics.

STAT 681(F) BIostatISTICS (3-0-3)

Instructor: Kimmel

STAT 682(F) MULTIVARIATE DENSITY ESTIMATION (3-0-3)

Instructor: Scott

STAT 683 TOPICS IN PROBABILITY (3-0-3)

Instructor: Olofsson

STAT 684(S) LINEAR MODELS AND CATEGORICAL DATA ANALYSIS (3-0-3)

Instructor: Baggerly

STAT 685(S) SPACIAL STATISTICS (3-0-3)

Instructor: Cox

STAT 686 MARKET MODELS (3-0-3)*Instructor: Thompson***STAT 800 THESIS (hours variable)****Swedish (SWED)****The School of Humanities/Department of German and Slavic Studies****SWED 101(F) ELEMENTARY SWEDISH (3-1-4)**

DISTRIBUTION COURSE: GROUP I

Study of Swedish, moving rapidly from elementary work to challenging readings such as the social-critical stories of Nobel Prize winner Pär Lagerkvist. Includes supplemental tapes. *Instructor: Wilson*

SWED 102(S) ELEMENTARY SWEDISH (3-1-4)

DISTRIBUTION COURSE: GROUP I

Study of several Bergman films, supplemented by readings and tapes in Norwegian, Danish, and Icelandic. Prerequisite: SWED 101. *Instructor: Wilson*

Theater (THEA)**The School of Humanities/Department of Art and Art History****THEA 301(F) ACTING I (3-0-3)**

DISTRIBUTION COURSE: GROUP I

Exploration of the development of the actor's technique through exercises in body work, concentration, creative imagination, sensory perception, and improvisation. Prerequisite: permission of instructor. *Instructor: Havens*

THEA 302(S) ACTING II (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of scene analysis and characterization. Includes work on acting roles. Prerequisite: permission of instructor. *Instructor: Havens*

THEA 329 SPECIAL PROBLEMS: TECHNICAL PRODUCTION (3-0-3)

Independent study in technical production. Prerequisite: permission of instructor. *Instructor: Havens*

THEA 431 SPECIAL PROBLEMS: HISTORY, LITERATURE (3-0-3)

Independent study of theater history and literature. Prerequisite: permission of instructor. *Instructor: Havens*

THEA 432 SPECIAL PROBLEMS: DESIGN, DIRECTING (3-0-3)

Independent study of scene and lighting design and directing. Prerequisite: permission of instructor. *Instructor: Havens*

THEA 435 SPECIAL PROBLEMS: ADVANCED ACTING (3-0-3)

Independent study in acting. Prerequisite: permission of instructor. *Instructor: Havens*

Tibetan (TIBT)

The School of Humanities/Department of Linguistics

TIBT 330 INTRODUCTION TO TIBETAN LANGUAGE (3-0-3)

Study of readings in Tibetan Bön and Buddhist religious texts. Also offered as RELI 330.

Instructor: Klein

University Courses (UNIV)

UNIV 302(S) COMMUNICATION, COGNITION, AND CULTURE (3-0-3)

Study of the evolution of information technologies and their influence on civilization. Includes shifts in modes of communication (e.g., passage from oral to written communication, from manuscript to print, and from print to instantaneous transmission via the global network of electronic communication) and the influence of these modes on the organization of human culture, technological progress, and individual experience, as well as their place at the crossroads of humanistic, social, and scientific ideas. Term projects for presentation at the end of the semester required. *Instructors: Gorry, Kelber, Reiser, Van Helden*

UNIV 303(F) EVOLUTION, PERCEPTION, AND CULTURE (3-0-3)

Exploration of the interactions of science and culture in the realm of perception, change, and evolution. Includes the significance of natural selection as a revolutionary scientific and cultural concept and the impact of evolutionary thought on religion, psychology, literature, cognitive science, and other fields, as well as the way that sensory systems and cultural contexts filter and color both perception and concepts of time, change, space, and evolution, with emphasis on links between prehistorically derived perceptual systems and the current milieu of the "global village."

Instructors: Grandy, Matthews

The Program for the Study of Women and Gender (WGST)

WGST 101(S) INTRODUCTION TO THE STUDY OF WOMEN AND GENDER (3-0-3)

DISTRIBUTION COURSE: GROUP I

An introductory survey of issues in the study of women, including women's social, political, and legal status in the United States and around the world; feminist perspectives on sexuality, gender, family, and reproduction; and the implications of these perspectives for social and critical theory. Also offered as HUMA 270. *Instructors: Derrick, Sanders*

WGST 214(S) INTRODUCTION TO WOMEN'S HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the idea of women's history (is it the same as the history of women?) by examining the approaches and types of evidence that are used by scholars in the field. Includes the relationship of women's history to related fields such as feminist theory, gender studies, and the history of sexuality. See also WGST 314. Also offered as HIST 244. Not offered 1997-98. *Instructor: Quillen*

WGST 215(S) WOMEN AND GENDER IN MODERN ENGLAND (3-0-3)

From the reign of Elizabeth I to the reign of Elizabeth II, this course explores the history of women and gender in England. Looking especially at critical moments in politics, economics, medicine, and literary expression, this course investigates the changes in women's experience from an era of privileged aristocracy and preindustrial labor to the varied employment and mass politics of the 20th century. In the Early Modern and the Modern periods, gender boundaries and changing gender definitions shaped the experiences of women as leaders, writers, workers, and members of English society. This course explores these issues in lectures, discussions, and analyses of primary sources. Requirements include a journal based on your readings, a midterm exam, a brief research paper, and a final exam. Options for the research paper include using Internet-accessible electronic texts. Also offered as HIST 260. *Instructor: Whitlock*

WGST 233 THE FEMALE BODY IN CONTEMPORARY CULTURE (3-0-3)

With permission of instructor. Also offered as ENGL 384. Not offered 1997-98. *Instructor: Michie*

WGST 234(S) A HISTORY OF WOMEN IN AMERICA (3-0-3)

DISTRIBUTION COURSE: GROUP II

A study of the social, economic, and political history of American women from precolonial times to the present. Also offered as HIST 241. *Instructor: Turner*

WGST 249(F) WOMEN WRITERS FROM 1400-1900 (3-0-3)

DISTRIBUTION COURSE: GROUP I

A survey of women writers from the Middle Ages and Renaissance through the 18th and 19th centuries, among them Amelia Lanier, Anne Finch, Aphra Behn, Mary Wollstonecraft, Jane Austen, and Mary Shelley. Also offered as ENGL 283. *Instructor: Chance*

WGST 256(F) LANGUAGE AND SOCIETY (3-0-3)

This course treats language as a social phenomenon to show how language, personal identity, and institutions of social control interrelate. The course focuses on linguistic interaction in daily life and how gender, ethnic, class, activity, and geographic variation affect language use. Also offered as LING 205. *Instructor: Polanyi*

WGST 300 MEDIEVAL LITERATURE: GENDER AND POWER IN OLD ENGLISH LITERATURE (3-0-3)

Also offered as ENGL 311. Not offered 1997-98. *Instructor: Chance*

WGST 301 ARTHURIAN LITERATURE (3-0-3)

A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Not offered 1997-98. *Instructor: Chance*

WGST 305(F) CHAUCER (3-0-3)

DISTRIBUTION COURSE: GROUP I

Selected early poems, the General Prologue, and *The Canterbury Tales*, including those of the Knight, Wife of Bath, Pardoner, Nun's Priest, and others. Requirements include a medieval feast and a dramatization of a Chaucerian tale. Also offered as ENGL 316. *Instructor: Chance*

WGST 311(S) SOCIETY AND THE SEXES IN MODERN FRANCE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of gender roles, gender ideology, and sexual practices in the construction of French society and culture from the Enlightenment to World War II. Includes sexual politics and emergent "public sphere" in the 18th century, masculine and feminine images of the state during the French Revolution, feminist discourses and politics in 1789, 1848, and during the campaign for women's suffrage, and family structures, patriarchy, and notions of property. Taught in English. Some readings may be in French. Also offered as HIST 360 and FREN 360. *Instructor: Sherman*

WGST 314(S) INTRODUCTION TO WOMEN'S HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Enriched version of WGST 214. May not receive credit for both WGST 214 and 314. See also WGST 214. Also offered as HIST 344. Not offered 1997-98. *Instructor: Quillen*

WGST 324(F) SOCIOLOGY OF GENDER (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the relationship between gender and social role. Includes development of the contemporary sexual division of labor and the process of socialization with reference to family, education, media, and occupations. Limited enrollment. Also offered as SOCI 306. *Instructor: Long*

WGST 325(S) SOCIOLOGY OF THE FAMILY (3-0-3)

DISTRIBUTION COURSE: GROUP II

A gendered analysis of role structure, sexuality, emotional bonds, and the family as a support network in differing forms of contemporary families. The functioning of the family in differing cultures, classes, and lifestyles and its relation to other social institutions. Limited enrollment. Also offered as SOCI 334. *Instructor: Valenzuela*

WGST 326(S) SEXUALITY AND THE SOCIAL ORDER (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examination of ways that societies conceive of and regulate sexuality in their members' lives. Includes sexual value systems, forms of sexual conduct (e.g., the number, identities, objectives, and intimacy/power relations of participants), the changing role of sexuality over the typical life span, sexual communication, the future of sexuality, and AIDS. Also offered as SOCI 386. *Instructor: Gordon*

WGST 327(F) 20TH-CENTURY WOMEN WRITERS: SEX, GENDER, AND MODERNISM (3-0-3)

DISTRIBUTION COURSE: GROUP I

May be repeated for credit. Also offered as ENGL 380. *Instructor: Lamos*

WGST 332 SELF, SEX, AND SOCIETY IN ANCIENT GREECE (3-0-3)

DISTRIBUTION COURSE: GROUP II

A survey of the depiction of women in Greek and Roman mythology, literature, and art together with a study of the lives of Greek and Roman women as evidenced by archaeological as well as literary materials. Also offered as ANTH 325. Not offered 1997-98. *Instructor: Faubion*

WGST 335(S) THE LIFECYCLE: A BIOCULTURAL VIEW (3-0-3)

DISTRIBUTION COURSE: GROUP II

The human life cycle from conception to death. Focus is on the interaction between biological processes and culture. Also offered as ANTH 388/588. *Instructor: Georges*

WGST 336(S) HISTORY AS A CULTURAL MYTH (3-0-3)

DISTRIBUTION COURSE: GROUP II

Ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as statement of cultural values as well as conceptualizations of cause, change, time, and reality. Also offered as ANTH 308/508. *Instructor: Taylor*

WGST 337 FEMINIST ISSUES: WITCHES, SAINTS, SOLDIERS, AND SHREWS: WOMEN'S VOICES IN THE RENAISSANCE (3-0-3)

Also offered as ENGL 383. Not offered 1997-98. *Instructor: Skura*

WGST 338(S) GENDER AND SOCIETY IN EARLY MODERN EUROPE (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of the relationship between ideas about gender and the social, political, and legal institutions in Europe from c. 1350 to 1800. Includes the structure and role of the family, gender roles in religious institutions, and the regulation of sexuality. Also offered as HIST 363. Not offered 1997-98. *Instructor: Quillen*

WGST 342(S) WOMEN IN GREECE AND ROME (3-0-3)

DISTRIBUTION COURSE: GROUP I

Survey of the depiction of women in Greek and Roman mythology, literature, and art. Includes a study of the lives of Greek and Roman women as evidenced by archaeological as well as literary materials. Also offered as CLAS 322 and HIST 324. *Instructor: Wallace*

WGST 350(F) GENDER AND SYMBOLISM (3-0-3)

DISTRIBUTION COURSE: GROUP II

Examinations of beliefs concerning men, women, and gender in different cultures, including the West, relating to issues of symbolism, power, and the distribution of cultural models. Also offered as ANTH 327/527. *Instructor: Taylor*

WGST 352 FEMINISM AND NATIONALISM (3-0-3)

Also offered as ENGL 381. Not offered 1997-98. *Instructor: Joseph*

WGST 354(F) SURVEY: CHICANO/A POETRY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Also offered as ENGL 373. *Instructor: Aranda*

WGST 357(F) BUDDHISM AND THE FEMALE (3-0-3)

Exploration of questions of identity, relationship, and personal change through an examination of Buddhist thought and female symbolism in light of current work on or by women. Also offered as RELI 325/575. Not offered 1997-98. *Instructor: Klein*

WGST 359 CONTEMPORARY WOMEN FILMMAKERS (3-0-3)

In a comparative study, characteristics of women's cinema will be explored through themes, techniques, and imaging, taking into account the context of production. The course will present a survey of selected films by international women filmmakers such as Akerman, Varda, Kuryis; Sander, Export, Treut, Brueckner, Trotta; Borden, Friedrich, Rainer, Seidelman; Campion, etc. All foreign films are subtitled. Course taught in English. Also offered as GERM 391/578. Not offered 1997-98. *Instructor: Eifler*

WGST 402 FEMINIST ISSUES: GENDER AND IMMIGRATION

Not offered 1997-98.

WGST 405 VICTORIAN STUDIES: AUSTEN ONLY (3-0-3)

Also offered as ENGL 441. Not offered 1997-98. *Instructor: Michie*

WGST 406(S) SEMINAR: CHRISTINE DE PIZAN IN THE 15TH CENTURY (3-0-3)

The Franco-Italian woman poet Christine de Pizan was translated into English during the 15th century along with poems dealing with the subject of female experience and the female hero, such as Jean d'Arras's "Melusene" and Boccaccio's "Concerning Famous Women." This seminar will examine these and other English poems about women as early as Chaucer's "Legend of Good Women" and as late as the "Assembly of Ladies," "Floure and the Leafe," "The Assembly of Gods," and Thomas Hoccleve's "Letter of Cupid." With permission of instructor. Also offered as ENGL 515. *Instructor: Chance*

WGST 407(S) INTRODUCTION TO FEMINIST LITERARY THEORY AND CRITICISM (3-0-3)

DISTRIBUTION COURSE: GROUP I

This course begins with an overview of themes and practices in feminist literary theory and criticism from the 1970s to the present. Then we will turn our attention to recent work that engages the pressing concerns of feminist theory in the 1990s, work that investigates the shape of gendered subordination and strategies for feminist agency in the contexts both of cultural diversity and of particular women's negotiation of race, class, sexuality, and national identifications (among others). Also offered as ENGL 481. *Instructor: Lurie*

WGST 410 TOPICS IN LITERATURE: NARRATIVES OF BESET MANHOOD (3-0-3)

Not offered 1997-98. *Instructor: Derrick*

WGST 412 WOMEN IN FRENCH LITERATURE (3-0-3)

Examination of ways that women have been represented in fiction—by themselves and by others—since the early modern period. Includes Mme de Lafayette, de Sade, Baudelaire, Villiers de l'Isle-Adam, de Beauvoir, Duras, and Wittig, with emphasis on the constitution of "the feminine" in literary texts as a cultural, historical, and social artifact. Also offered as FREN 460. *Instructor: Harter*

WGST 415(S) CONCEPTIONS OF FAMILY AND GENDER IN JEWISH HISTORY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of textual representations of gender and the relationships between the masculine and the feminine, as well as the connections between representations and behavior. Includes the Hebrew Bible, rabbinic literature, Crusade narratives, medieval Jewish philosophy, Kabbalistic texts, Hasidic exegesis, and Zionist ideological literature. All primary sources in English translation. Also offered as HIST 449. Not offered 1997-98. *Instructor: Fishman*

WGST 416(F) HISTORY OF MEN IN BRITAIN, 1750-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of what it meant to "be a man" in Britain between the 18th century and today and how male experiences and the meaning of manhood changed in society and culture. Also offered as HIST 480. Not offered 1997-98. *Instructor: Wiener*

WGST 417(S) WOMEN IN THE AMERICAN SOUTH (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of how slavery and its legacies affected relationships among women and between women and men, what forces and issues brought southern women together and what held them apart, and how race affected the construction of gender. Includes women's lives in the South from the mature slave system of the 1830s through the civil rights movements of the 1960s. Also offered as HIST 482. Not offered 1997-98. *Instructor: Dailey*

WGST 419 SEX AND GROUP IDENTITY, FROM BIBLICAL TIMES TO THE MODERN UNITED STATES (3-0-3)

DISTRIBUTION COURSE: GROUP II

Comparative analysis of the problem of miscegenation (sexual intercourse between members of different religious, racial, or ethnic groups) in a variety of historical contexts. Includes biblical Judaism, early Christianity, medieval and early modern Spain, Latin America, modern German, and the U.S. Extensive reading in primary and secondary historical texts, as well as in the anthropology of marriage required. Limited enrollment. Also offered as HIST 489. Not offered 1997-98. *Instructor: Nirenberg*

WGST 420(F) WOMEN AND GENDER IN 19TH-CENTURY EUROPE (4-0-4)

Introduction to current debates about women's history, the history of feminism, and gender history in 19th-century Europe. Includes public and private rights, republicanism and feminism, gender and difference, socialism, identity and cultural modernism, and gender and social reform. With permission of instructor. Also offered as HIST 549. Not offered 1997-98. *Instructor: Caldwell*

WGST 421 SEMINAR: SHAKESPEARE AND DIFFERENCE (3-0-3)

With permission of instructor. Also offered as ENGL 520. Not offered 1997-98. *Instructor: Skura*

WGST 430(S) STUDIES IN LITERARY CRITICISM: QUEER THEORY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Also offered as ENGL 498. *Instructor: Lamos*

WGST 433(F) THEORIES IN MODERNITY/ POSTMODERNITY I (3-0-3)

DISTRIBUTION COURSE: GROUP II

An advanced course for graduate students and undergraduate majors with interests in the interdisciplinary field of cultural studies. Readings in the work of Saussure, Gadamer, Derrida, Bakhtin, Foucault, and others. Several papers are required that emphasize the application of ideas to cultural analysis of contemporary life. Also offered as ANTH 415/615. *Instructor: Milun*

WGST 439(F) WOMEN AND GENDER IN RENAISSANCE ITALY (3-0-3)

DISTRIBUTION COURSE: GROUP II

Exploration of whether or not there was a Renaissance for women and how gender influenced the roles of women and men in Renaissance society. Includes Renaissance and modern sources. Not offered 1997-98. *Instructor: Brown*

WGST 440(F) WOMEN IN MUSIC

With permission of instructor. Also offered as MUSI 621. *Instructor: Citron*

WGST 453 TOPICS IN AFRICAN AMERICAN LITERATURE: BLACK WOMEN WRITERS, 1850-PRESENT (3-0-3)

DISTRIBUTION COURSE: GROUP I

Content varies from year to year. May be repeated for credit. Also offered as ENGL 470. *Instructor: Fultz*

WGST 454 GERMAN WOMEN AUTHORS (3-0-3)

Literature and films by German-speaking feminists will be critically analyzed and discussed in their theoretical and sociopolitical contexts. Emphasis will be placed on writers such as Bachmann, Wolf, Maron, and Jelinek as well as filmmakers such as Sander, Brueckner, Export, Trotta, and Treut. (In English.) Also offered as GERM 454. Not offered 1997-98. *Instructor: Eifler*

WGST 455(F) WOMEN AND GENDER IN ISLAMIC SOCIETIES (3-0-3)

Examination of some features of the legal position and social realities of men and women in the Islamic world, with emphasis on how boundaries of gender have traditionally been drawn. Includes family and sexual ethics, the harem, polygyny, divorce, and eunuchs (who played an important role both in the military and in certain religious institutions). Also offered as HIST 438. *Instructor: Sanders*

WGST 458(F) BUDDHIST MEDITATION THEORY: WOMEN AND MEN (3-0-3)

DISTRIBUTION COURSE: GROUP I

Study of the meditation practices of India and Tibet. Includes associated theories, visual symbols, literary genres, and cultural assumptions, seen in light of current Euro-American feminist work on religion and in a cross-cultural comparative framework. May work in Tibetan language for extra credit. Prerequisite: permission of instructor. Also offered as RELI 471/571. Not offered 1997-98. *Instructor: Klein*

WGST 460(S) FEMINIST SOCIAL THOUGHT (3-0-3)

DISTRIBUTION COURSE: GROUP II

Feminist theory as critique and reconstruction—from Wollstonecraft and Simone de Beauvoir to contemporary debates about equity, difference, knowledge, sexuality, and power. Also offered as HUMA 420 and SOCI 395. Not offered 1997-98. *Instructor: Long*

WGST 480(F) FEMINIST LITERARY THEORY (3-0-3)

DISTRIBUTION COURSE: GROUP I

Also offered as ENGL 382/582. Not offered 1997-98. *Instructor: Lurie*

*Administration
and Staff*



Administration

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Vice Provost for Research and Graduate Studies	Jordan Konisky
Vice Provost and University Librarian	Charles Henry
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Vice President for University Advancement	Kathryn R. Costello
Vice President for Finance and Administration	Dean W. Currie
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General Counsel	Shirley R. Redwine
Dean of the School of Humanities	Judith Brown
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Dean of the School of Architecture	Lars Lerup
Dean of the School of Continuing Studies	Mary B. McIntire
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Dean of the Jesse H. Jones Graduate School of Administration	Gilbert R. Whitaker, Jr.
Dean of Admission and Records	Richard N. Stabell

Administrative Offices

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Human Resources	Caroline Garcia
Multicultural Affairs	Catherine E. Clack
Networking and Planning	Farrell E. Gerbode

Registrar	James G. Williamson
Sponsored Research	Jean E. Vorhaben
Student Activities	Sarah Nelson Crawford
Student Health Services	Amanda Schnee
University Police Department	Mary M. Voswinkel
User Services	Andrea Martin

College Masters

Baker College	Arthur and Joan Few
Brown College	Robert and Jamie Haymes
Hanszen College	Dennis Huston and Lisa Bryan
Jones College	Enrique and Maribel Barrera
Lovett College	William Leeman and Constance Burke
Richardson College	John and Penelope Bennett
Wiess College	John and Paula Hutchinson
Will Rice College	Dale and Elise Sawyer

Instructional and Research Staff

Emeritus Faculty

- Akers, William Walter**, 1947-93. Professor Emeritus in Chemical Engineering
B.S. (1943) Texas Technological College; M.S. (1944) University of Texas at Austin; Ph.D. (1950) University of Michigan
- Andrews, John F.**, 1982-91. Professor Emeritus of Environmental Science and Engineering
B.S.C.E. (1951), M.S. (1954) University of Arkansas; Ph.D. (1964) University of California at Berkeley
- Austin, Walter J.**, 1960-87. Professor Emeritus of Civil Engineering
B.S.C.E. (1941) Rice Institute; M.S. (1946), Ph.D. (1949) University of Illinois
- Awapara, Jorge**, 1957-84. Professor Emeritus of Biochemistry
B.S. (1941), M.S. (1942) Michigan State University; Ph.D. (1947) University of Southern California
- Bailar, Benjamin F.**, 1987-97. H. Joe Nelson, III, Professor Emeritus of Administration
B.A. (1955) University of Colorado; M.B.A. (1959) Harvard Graduate School of Business Administration
- Bale, Allen M.**, 1947-78. Athletic Director Emeritus
B.S. (1930) Rice Institute; M.A. (1939) Columbia University
- Bally, Albert W.**, 1981-96. Harry Carothers Wiess Professor Emeritus of Geology
Ph.D. (1953) University of Zurich, Switzerland
- Baker, Donald Roy**, 1966. Professor Emeritus of Geology and Honorary Associate of Brown College
B.S. (1950) California Institute of Technology; Ph.D. (1955) Princeton University
- Barker, J. R.**, 1949-86. Professor Emeritus of Health and Physical Education
B.S. (1949) Rice Institute; M.Ed. (1954) University of Texas at Austin
- Beckmann, Herbert W. K.**, 1957-85. Professor Emeritus of Mechanical Engineering
Cand. Ing. (1939), Dipl. Ing. (1944), Dr. Ing. (1957), Hanover University, Germany
- Bland, Robert L.**, 1954-92. Professor Emeritus of Human Performance and Health Sciences
B.A. (1953) Central Washington State College; M.A. (1954) Columbia University
- Boterf, Chester Arthur**, 1973-93. Professor Emeritus of Art
B.A. (1959) Kansas University; M.F.A. (1965) Columbia University
- Brace, Paul**, 1996. Clarence L. Carter Professor of Political Science
B.S. (1976) University of Oregon; M.A. (1979), Ph.D. (1982) Michigan State University
- Brotzen, Franz Richard**, 1954-86. Stanley C. Moore Professor Emeritus of Materials Science
B.S. (1950), M.S. (1953), Ph.D. (1954) Case Institute of Technology
- Brown, Katherine Tsanoff**, 1963-89. Professor Emerita of Art History and Honorary Associate of Will Rice College
B.A. (1938) Rice Institute; M.F.A. (1940) Cornell University
- Burt, George**, 1984-97. Professor Emeritus of Theory and Composition
B.A. (1955) University of California at Berkeley; M.A. (1958) Mills College; M.F.A. (1962) Princeton University
- Cason, Carolyn**, 1956-74. Lecturer Emerita in Dietetics
B.S. (1934) University of Texas at Austin; M.A. (1939) Columbia University

- Chamberlain, Joseph W.**, 1971-90. Professor Emeritus of Space Physics and Astronomy
A.B. (1948), A.M. (1949) University of Missouri; M.S. (1951), Ph.D. (1952) University of Michigan
- Chapman, Alan Jesse**, 1946-95. Harry S. Cameron Professor Emeritus of Mechanical Engineering
B.S.M.E. (1945) Rice Institute; M.S. (1949) University of Colorado; Ph.D. (1953) University of Illinois
- Cheatham, Jr., John Bane**, 1963-96. Professor Emeritus of Mechanical Engineering
B.S. (1948), M.S. (1953) Southern Methodist University; Ph.D. (1960) Rice University
- Clark, Howard Charles**, 1966-88. Professor Emeritus of Geology and Geophysics
B.S. (1959) University of Oklahoma; M.A. (1965), Ph.D. (1967) Stanford University
- Class, Calvin M.**, 1952-85. Professor Emeritus of Physics
A.B. (1943), Ph.D. (1951) Johns Hopkins University
- De Bremaecker, Jean-Claude**, 1959-94. Professor Emeritus of Geology and Geophysics
Ingenieur Civil des Mines (1948) University of Louvain, Belgium; M.S. (1950) Louisiana State University; Ph.D. (1952) University of California at Berkeley
- Dessler, Alexander J.**, 1963-93. Professor Emeritus of Space Physics and Astronomy
B.S. (1952) California Institute of Technology; Ph.D. (1956) Duke University
- Dix, Robert H.**, 1968-94. Professor Emeritus of Political Science
B.A. (1951), M.A. (1953), Ph.D. (1962) Harvard University
- Dowden, Wilfred Sellers**, 1948-87. Professor Emeritus of English and Honorary Associate of Baker College
B.A. (1939), M.A. (1940) Vanderbilt University; Ph.D. (1949) University of North Carolina
- Drew, Katherine Fischer**, 1950-96. Lynette S. Autrey Professor Emerita of History
B.A. (1944), M.A. (1945) Rice Institute; Ph.D. (1950) Cornell University
- Evans, Elinor Lucile**, 1964-85. Albert K. and Harry W. Smith Professor Emerita of Architecture
B.A. (1938) Oklahoma State University; M.F.A. (1954) Yale University
- Estle, Thomas L.**, 1967-96. Professor Emeritus of Physics
B.A. (1953) Rice Institute; M.S. (1954), Ph.D. (1957) University of Illinois
- Fliegel, Raphael**, 1975-89. Professor Emeritus of Violin
- Fulton, James Street**, 1946-74. Professor Emeritus of Philosophy and Honorary Master of Will Rice College
B.A. (1925), M.A. (1929) Vanderbilt University; Ph.D. (1934) Cornell University
- Gardner, Gerald H. F.**, 1990-93. Professor Emeritus of Geophysics
B.S. (1948) Trinity College, Dublin; M.Sc. (1949) Carnegie Mellon University; Ph.D. (1953) Princeton University
- Gordon, William E.**, 1955-85. Distinguished Professor Emeritus of Space Physics and Astronomy and of Electrical and Computer Engineering
B.A. (1939), M.A. (1942) Montclair State College; M.S. (1946), Ph.D. (1953) Cornell University
- Hackerman, Norman**, 1970-85. President Emeritus and Distinguished Professor Emeritus of Chemistry
A.B. (1932), Ph.D. (1935) Johns Hopkins University
- Hake, Evelyn**, 1932-74. Lecturer Emerita in Biology
B.A. (1930), M.A. (1932) Rice Institute
- Hale, Elton B.**, 1963-79. Professor Emeritus of Accounting
B.S. (1937), M.A. (1940) Southwest Texas State Teachers College; Ph.D. (1948) University of Texas at Austin

- Higginbotham, Sanford Wilson**, 1961-83. Professor Emeritus of History
B.A. (1934) Rice Institute; M.A. (1941) Louisiana State University; Ph.D. (1949) University of Pennsylvania
- Hodges, Lee**, 1930-71. Professor Emeritus of French
B.S. (1930) Harvard University; M.A. (1934) Rice Institute
- Holt, Edward C.**, 1956-93. Professor Emeritus of Civil Engineering
S.B. (1945), S.M. (1947) Massachusetts Institute of Technology; Ph.D. (1956) Pennsylvania State University
- Huddle, Donald L.**, 1964-92. Professor Emeritus of Economics
B.S. (1959), M.A. (1960) University of California at Los Angeles; Ph.D. (1964) Vanderbilt University
- Hyman, Harold M.**, 1968-97. William P. Hobby Professor Emeritus of History
B.A. (1948) University of California at Los Angeles; M.A. (1950), Ph.D. (1952) Columbia University
- Jitcoff, Andrew N.**, 1950-72. Professor Emeritus of Russian
Bachelor (1928), Master (1931) Prague Institute of Technology, Czechoslovakia
- Jones, Samuel**, 1973-97. Professor Emeritus of Music
B.A. (1957) Millsaps College; M.A. (1958), Ph.D. (1960) Eastman School of Music, University of Rochester
- Leal, Maria Teresa**, 1965-96. Professor Emerita of Spanish and Portuguese
B.A. (1946) Pontificia Universidade Catolica, Brazil; Ph.D. (1963) Universidade Federal
- Lecuyer, Maurice Antoine**, 1962-79. Professor Emeritus of French
Baccalaureat es lettres (1937), Licence es lettres (1943), Diplome d'etudes superieures (1944) Universite de Paris, France; Ph.D. (1954) Yale University
- Leeds, Jr., J. Venn**, 1964-89. Professor Emeritus of Electrical and Computer Engineering
B.A. (1955), B.S.E.E. (1956) Rice Institute; M.S.E.E. (1960), Ph.D. (1963) University of Pittsburgh; J.D. (1972) University of Houston
- Lewis, Edward S.**, 1948-90. Professor Emeritus of Chemistry
B.S. (1940) University of California at Berkeley; Ph.D. (1947) Harvard University
- Meixner, John**, 1968-95. Professor Emeritus of English
B.A. (1951) City College of New York; M.A. (1953), Ph.D. (1957) Brown University
- Miele, Angelo**, 1964-93. Professor Emeritus in Mechanical Engineering and Materials Science and Computational and Applied Mathematics
Dr. C.E. (1944), Dr. A.E. (1946) University of Rome
- Morehead, Jr., James Caddell**, 1940-79. Professor Emeritus of Architecture and Honorary Associate of Baker College
A.B. (1935) Princeton University; B.Arch. (1939) Carnegie Institute of Technology
- Nettleton, Lewis L.**, 1971-76. Lecturer Emeritus in Geology
B.S. (1918) University of Idaho; M.S. (1921), Ph.D. (1923) University of Wisconsin at Madison
- Nielsen, Jr., Niels C.**, 1951-91. Professor Emeritus of Philosophy and Religious Thought and Honorary Associate of Will Rice College
B.A. (1942) George Pepperdine University; B.D. (1946), Ph.D. (1951) Yale University
- Norris, Mary**, 1975-88. Professor Emerita of Music
Artist Diploma in Piano (1939) Curtis Institute of Music
- Oliver, Covey**, 1979-81. Radoslav A. Tsanoff Professor Emeritus of Public Affairs
B.A. (1933), J.D. (1936) University of Texas at Austin; LL.M. (1953), S.J.D. (1954) Columbia University; LL.D. (1976) Southern Methodist University
- Oliver-Smith, Philip**, 1969-82. Professor Emeritus of Art History
B.A. (1937), M.A. (1950) University of California at Berkeley; Ph.D. (1969) New York University
- O'Neill, John F.**, 1965-80. Professor Emeritus of Art
B.F.A. (1936), M.F.A. (1939) University of Oklahoma

- Parsons, David G.**, 1953-81. Professor Emeritus of Art and Honorary Associate of Will Rice College
B.S. (1934), M.S. (1937) University of Wisconsin
- Pfeiffer, Paul E.**, 1947-97. Professor Emeritus of Computational and Applied Mathematics
B.S.E.E. (1938) Rice Institute; B.D. (1943) Southern Methodist University; M.S.E.E. (1948), Ph.D. (1952) Rice Institute
- Phillips, Gerald C.**, 1949-88. Professor Emeritus of Physics
B.A. (1944), M.A. (1947), Ph.D. (1949) Rice Institute
- Philpott, Charles William**, 1964-96. Professor Emeritus of Ecology and Evolutionary Biology
B.A. (1957), M.S. (1958) Texas Technological College; Ph.D. (1962) Tulane University
- Raaphorst, Madeleine Rousseau**, 1963-89. Professor Emerita of French
Baccalaureat es lettres (1939) Université de Poitiers, France; Licence en droit (1943) Université de Paris, France; Ph.D. (1959) Rice Institute
- Rachford, Jr., Henry H.**, 1964-82. Professor Emeritus of Mathematical Sciences
B.S. (1945), M.A. (1947) Rice Institute; Sc.D. (1950) Massachusetts Institute of Technology
- Ransom, Jr., Harry Steelsmith**, 1954-81. Professor Emeritus of Architecture
B.Arch. (1947) Carnegie Institute of Technology; M.Arch. (1967) Texas A&M University
- Rath, R. John**, 1963-80. Mary Gibbs Jones Professor Emeritus of History
A.B. (1932) Kansas; M.A. (1934) University of California at Berkeley; Ph.D. (1941) Columbia University
- Risser, J. R.**, 1946-81. Professor Emeritus of Physics
A.B. (1931) Franklin and Marshall College; M.A. (1935), Ph.D. (1938) Princeton University
- Sims, James R.**, 1942-87. Herman and George R. Brown Professor Emeritus of Civil Engineering
B.S. (1941) Rice Institute; M.S. (1950), Ph.D. (1956) University of Illinois
- Spears, Monroe Kirk**, 1964-86. Libbie Shearn Moody Professor Emeritus of English
A.B., A.M. (1937) University of South Carolina; Ph.D. (1940) Princeton University
- Stebbins, Ronald F.**, 1968-95. Professor Emeritus of Space Physics and Astronomy and of Physics
B.Sc. (1952), Ph.D. (1956) University College, London
- Stormer, Jr., John C.**, 1983-95. Croneis Professor Emeritus of Geology
A.B. (1963) Dartmouth College; Ph.D. (1971) University of California at Berkeley
- Thrall, Robert**, 1969-84. Noah Harding Professor Emeritus of Mathematical Sciences and Professor Emeritus of Administrative Science
B.A., M.A. (1935) Illinois College; Ph.D. (1937) University of Illinois
- Tipton, Albert N.**, 1975-87. Professor Emeritus of Music
Artists Diploma (1939) Curtis Institute; B.M. (1952) Washington University; M.M. (1953) St. Louis Institute of Music
- Todd, Anderson**, 1949-92. G. S. Wortham Professor Emeritus of Architecture
B.A. (1943), M.F.A. (1949) Princeton University
- Topazio, Virgil William**, 1965-83. Laurence H. Favrot Professor Emeritus of French
B.A. (1943) Wesleyan College; M.A. (1947), Ph.D. (1951) Columbia University
- Trammell, George T.**, 1961-93. Professor Emeritus of Physics
B.A. (1944) Rice Institute; Ph.D. (1950) Cornell University
- Trepel, Shirley**, 1975-94. Professor Emerita of Violoncello
B.Mus. (1945) Curtis Institute of Music
- Wadsworth, Philip A.**, 1964-73. Professor Emeritus of French
A.B. (1935), Ph.D. (1939) Yale University

- Walker, James B.,** 1964-92. Professor Emeritus of Biochemistry and Cell Biology
B.S. (1943) Rice Institute; M.A. (1949), Ph.D. (1952) University of Texas at Austin
- Wall, Frederick T.,** 1972-79. Professor Emeritus of Chemistry
B.C. (1933), Ph.D. (1937) University of Minnesota
- Wilhoit, Jr., James Cammack,** 1954-81. Professor Emeritus of Mechanical Engineering and Mathematical Sciences
B.S.M.E. (1948) Rice Institute; M.S. (1951) Texas A&M University; Ph.D. (1954) Stanford University
- Williams, George Guion,** 1924-68. Professor Emeritus of English
B.A. (1923), M.A. (1925) Rice Institute
- Young, Richard D.,** 1965-92. Professor Emeritus of Economics and Mathematical Sciences
B.A. (1951), M.A. (1954) University of Minnesota; Ph.D. (1965) Carnegie Institute of Technology

Faculty

- Aazhang, Behnaam,** 1985. Professor in Electrical and Computer Engineering and Associate of Lovett College
B.S. (1981), M.S. (1983), Ph.D. (1986) University of Illinois
- Achard, Michel,** 1997. Assistant Professor of French Studies
B.A. (1983) University of Aix-en-Provence; M.A. (1987), Ph.D. (1993) San Diego State University
- Adams, David L.,** 1988. Senior Faculty Fellow in Physics
B.S. (1980) California Institute of Technology; M.S. (1981), Ph.D. (1986) University of California at Los Angeles
- Adve, Sarita V.,** 1993. Assistant Professor in Electrical and Computer Engineering and Associate of Lovett College
B.S. (1982) Indian Institute of Technology; M.S. (1989), Ph.D. (1992) University of Wisconsin at Madison
- Ahmad, Salahuddin,** 1990. Faculty Fellow in Physics
B.Sc. (1974), M.Sc. (1975) University of Dhaka, Bangladesh; Ph.D. (1981) University of Victoria, B.C., Canada
- Akin, John Edward,** 1983. Professor of Mechanical Engineering and Computational and Applied Mathematics
B.S. (1964) Tennessee Polytechnic Institute; M.S. (1966) Tennessee Technological University; Ph.D. (1968) Virginia Polytechnic Institute
- Alcover, Madeleine,** 1975. Professor of French
Licence de lettres modernes (1962), Diplôme d'études supérieures (1963), Doctorat de 3e cycle (1965) France
- Alford, John R.,** 1985. Associate Professor of Political Science and Associate of Hanszen College
B.S. (1975), M.A. (1977) University of Houston; M.A. (1980), Ph.D. (1981) University of Iowa
- Ambler, John S.,** 1964. Professor of Political Science and Associate of Brown College
B.A. (1953) Willamette University; M.A. (1954) Stanford University; Certificat d'études politiques (1955) University of Bordeaux, France; Ph.D. (1966) University of California at Berkeley
- Anderson, John B.,** 1975. Professor of Geology and Geophysics
B.S. (1968) University of South Alabama; M.S. (1970) University of New Mexico; Ph.D. (1972) Florida State University

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B.S. (1976) Ecole Centrale De Lyon, France; M.S. (1977), Ph.D. (1980) University of California at Berkeley
- Antoulas, Athanasios C.**, 1985. Professor in Electrical and Computer Engineering
Dip. in Electrical Engineering (1975), Dip. in Mathematics (1975) Ph.D. (1980) Eidgenössische Technische Hochschule, Switzerland
- Apple, Max I.**, 1972. Gladys Louise Fox Professor of English
B.A. (1963) University of Michigan; M.A. (1965) Stanford University; Ph.D. (1970) University of Michigan
- Applegate, David**, 1996. Associate Professor of Computational and Applied Mathematics
B.S. (1984) University of Dayton; Ph.D. (1991) Carnegie Mellon University
- Aranda, Jr., Jose F.**, 1994. Assistant Professor of English and Associate of Wiess College
B.A. (1984) Yale University; M.A. (1988), Ph.D. (1994) Brown University
- Arbiter, Eric A.**, 1977. Assistant Professor of Bassoon
B.M.E. (1972) Oberlin Conservatory of Music; M.Mus. (1973) Cleveland Institute of Music
- Aresu, Bernard**, 1977. Professor of French Studies
Licence es lettres (1967) Université de Montpellier, France; Ph.D. (1975) University of Washington
- Armeniades, Constantine D.**, 1969. Professor in Chemical Engineering and Associate of Will Rice College
B.S. (1961) Northeastern University; M.S. (1967) Case Institute of Technology; Ph.D. (1969) Case Western Reserve University
- Atherholt, Robert**, 1984. Associate Professor of Oboe
B.Mus. (1976), M.Mus. (1977) Juilliard School of Music
- Atherton, Jr., W. Clifford**, 1988. Lecturer on Administrative Science
B.A. (1971) Rice University; M.B.A. (1977), Ph.D. (1983) University of Texas at Austin
- Atkinson, E. Neely**, 1985. Adjunct Professor of Statistics
B.A. (1975), M.A., Ph.D. (1981) Rice University
- Attwell, Khleber**, 1989. Adjunct Professor of Accounting
B.A. (1953) Rice University; M.P.H. (1982) University of Texas Health Science Center at Houston
- Austin, Joe Dan**, 1978. Associate Professor of Education and Statistics and Associate of Jones College
B.S. (in Applied Mathematics) (1966) Georgia Institute of Technology; M.S. (in Mathematical Statistics) (1968), Ph.D. (in Mathematics Education) (1972) Purdue University
- Auston, David H.**, 1994. Provost and Herman Brown Professor of Engineering
B.A. (1962), M.A. (1963) University of Toronto; Ph.D. (1969) University of California at Berkeley
- Avé Lallemand, Hans G.**, 1970. Professor of Geology and Geophysics and Associate of Sid Richardson College
B.Sc. (1960), M.Sc. (1964), Ph.D. (1967) Leiden University, The Netherlands
- Babikian, Virginia**, 1982. Professor of Voice
B.Mus. (1951), M.Mus. (1952) Westminster Choir College; Artists Diploma (1957), Teatro Lirico Sperimentale Di Spoleto, Italy
- Bachevalier, Jocelyne**, 1994. Adjunct Associate Professor of Psychology
B.S. (1971) University of Montreal; M.S. (1972) University of Provence in Marseille, France; Doctorate (1975) University of Paris; Ph.D. (1981) University of Montreal

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B.S. (1982) Rice University; M.S. (1990), Ph.D. (1992) University of Texas at Austin
- Bado, Richard**, 1992. Artist Teacher of Opera Studies
B.Mus. (1981) West Virginia University; M.M. (1983) Eastman School of Music, University of Rochester
- Baggerly, Keith A.**, 1996. Assistant Professor of Statistics and Associate of Brown College
B.A. (1990), M.A. (1993), Ph.D. (1994) Rice University
- Bailey, Walter B.**, 1982. Associate Professor of Musicology
B.Mus. (1976) Lewis and Clark College; M.A. (1979), Ph.D. (1982) University of Southern California
- Baker, Lovett**, 1986. Lecturer on Administrative Science
A.B. (1952) Princeton University
- Baker, Stephen D.**, 1963. Professor of Physics and Honorary Associate of Hanszen College
B.S. (1957) Duke University; M.S. (1959), Ph.D. (1963) Yale University
- Banavalkar, Prabadh V.**, 1993. Lecturer on Civil Engineering
B.E. (1962) Indian Institute of Technology, Bombay, India; M.S. (1966) University of Illinois; Ph.D. (1970) Cornell University
- Banks, Stephen J.**, 1991. Adjunct Professor of Administrative Science
B.S. (1962) Massachusetts Institute of Technology; M.B.A. (1967) Harvard University
- Baraniuk, Richard G.**, 1992. Associate Professor in Electrical and Computer Engineering
B.S. (1987) University of Manitoba; M.S. (1988) University of Wisconsin; Ph.D. (1992) University of Illinois
- Barlow, Michael**, 1993. Assistant Professor of Linguistics and Associate of Sid Richardson College
B.Sc. (1972) Liverpool University; M.Sc. (1973), Salford University; Ph.D. (1988) Stanford University
- Barnea, Amir**, 1989. Adjunct Professor of Administrative Science
B.A. (1964), M.Soc.Sc. (1967) Hebrew University, Israel; Ph.D. (1972) Cornell University
- Barrera, Enrique V.**, 1990. Associate Professor of Mechanical Engineering and Materials Science and Master of Jones College
B.S. (1979), M.S. (1985), Ph.D. (1987) University of Texas at Austin
- Barron, Andrew R.**, 1995. Professor of Chemistry and Materials Science and Associate of Baker College
B.S. (1983), Ph.D. (1986) Imperial College of Science and Technology, University of London
- Bartel, Bonnie**, 1995. Assistant Professor of Biochemistry and Cell Biology and Associate of Wiess College
B.S. (1983) Bethel College; Ph.D. (1990) Massachusetts Institute of Technology
- Bartnett, Robert Elliott**, 1988. Adjunct Lecturer on Statistics
B.S. (1952) University of Florida
- Batsell, Richard R.**, 1980. Jesse H. Jones Distinguished Associate Professor of Administrative Science, Associate Professor of Psychology, and Associate of Hanszen College
B.A., B.B.A. (1971), Ph.D. (1976) University of Texas at Austin
- Bayazitoglu, Yildiz**, 1977. Harry S. Cameron Professor in Mechanical Engineering and Associate of Will Rice College
B.S. (1967) Middle East Technological University; M.S. (1969), Ph.D. (1974) University of Michigan

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- Beckingham, Kathleen**, 1980. Professor of Biochemistry and Cell Biology
B.A. (1967), Ph.D. (1972) Cambridge University
- Bedient, Philip B.**, 1975. Professor of Environmental Science and Engineering
B.S. (1969), M.S. (1972), Ph.D. (1975) University of Florida
- Bell, Michael**, 1993. Associate Professor of Architecture
B.S. (1983) Catholic University of America; M. Arch. (1987) University of California at Berkeley
- Bennett, George N.**, 1978. Professor of Biochemistry and Cell Biology and Associate of Lovett College
B.S. (1968) University of Nebraska; Ph.D. (1974) Purdue University
- Bennett, John K.**, 1988. Associate Professor of Electrical and Computer Engineering and Associate of Wiess College and Master of Sid Richardson College
B.S.E.E. (1973), M.E.E. (1974) Rice University; M.S. (1983), Ph.D. (1987) University of Washington
- Bennett, Sherry**, 1995. Assistant Professor of Political Science and Associate of Sid Richardson College
B.A. (1990), M.A. (1993), Ph.D. (1995) Michigan State University
- Bidani, Akhil**, 1994. Adjunct Professor in Electrical and Computer Engineering
B.S. (1969) Punjab University, India; Ph.D. (1975) University of Houston; M.D. (1981) University of Texas Medical Branch at Galveston
- Billups, W. Edward**, 1970. Professor of Chemistry
B.S. (1961), M.S. (1965) Marshall University; Ph.D. (1970) Pennsylvania State University
- Bixby, Robert E.**, 1984. Lecturer on Computational and Applied Mathematics and Administrative Science and Associate of Baker College
B.S. (1968) University of California at Berkeley; M.S. (1971), Ph.D. (1972) Cornell University
- Black, David C.**, 1970. Adjunct Professor of Space Physics and Astronomy
B.S. (1965), M.S. (1967), Ph.D. (1970) University of Minnesota
- Black, Earl**, 1993. Herbert S. Autrey Professor of Political Science
B.A. (1964) University of Texas at Austin; Ph.D. (1968) Harvard University
- Blackburn, James B.**, 1975. Lecturer on Architecture and Environmental Science
B.A. (1969), J.D. (1972) University of Texas at Austin; M.S. (1974) Rice University
- Bledsoe, Robert S.**, 1994. Assistant Professor of German and Slavic Studies and Associate of Jones College
B.A. (1983), M.A. (1986), Ph.D. (1993) University of California at Berkeley
- Boles, John B.**, 1981. William Pettus Hobby Professor of History and Associate of Will Rice College
B.A. (1965) Rice University; Ph.D. (1969) University of Virginia
- Bongmba, Elias K.**, 1995. Assistant Professor of Religious Studies and Associate of Wiess College
B.A. (1987) Sioux Falls College; M.Div. (1989) North American Baptist Seminary; M.A. (1991) University of Iowa; Ph.D. (1995) University of Denver, Iliff School of Theology
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B.S. (1961) Louisiana Polytechnic Institute; M.A. (1963), Ph.D. (1965) Rice University
- Bor, Zsolt**, 1990. Adjunct Professor in Electrical and Computer Engineering
B.A., M.A. (1973) Kiev, USSR; M.A. (1974), Ph.D. (1975) Jate University, Hungary
- Borcea, Liliana**, 1996. Assistant Professor of Computational and Applied Mathematics
B.S. (1987) University of Bucharest; M.S. (1994), Ph.D. (1996) Stanford University
- Bordeaux, Janice**, 1994. Adjunct Lecturer of Psychology
B.F.A. (1971) University of Illinois; M.A. (1978), Ph.D. (1983) Duke University

- Bordelon, Jr., Cassius B.**, 1972. Lecturer on Human Performance and Health Sciences
B.S. (1964) Louisiana State University; Ph.D. (1972) Baylor College of Medicine
- Boshernitzan, Michael**, 1982. Professor of Mathematics
B.A. (1971) Moscow University, U.S.S.R.; M.A. (1974) Hebrew University, Israel; Ph.D. (1981) Weizmann Institute of Science, Israel
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B.S. (1955) Texas Technological College; S.M.E.E. (1957) Massachusetts Institute of Technology
- Bowers, Jeffrey S.**, 1994. Assistant Professor of Psychology and Associate of Jones College
B.S. (1987) University of Toronto; Ph.D. (1993) University of Arizona
- Braam, Janet**, 1990. Associate Professor of Biochemistry and Cell Biology
B.S. (1980) Southern Illinois University; Ph.D. (1985) Sloan-Kettering Division of Cornell Graduate School of Medical Sciences
- Brace, Paul**, 1996. Clarence L. Carter Professor of Political Science
B.S. (1976) University of Oregon; M.A. (1979), Ph.D. (1982) Michigan State University
- Brelsford, Jr., John W.**, 1970. Professor of Psychology and Statistics and Honorary Master of Brown College
B.A. (1960), M.A. (1961) Texas Christian University; Ph.D. (1965) University of Texas at Austin
- Brito, Dagobert L.**, 1984. George A. Peterkin Professor of Political Economy and Associate of Wiess College
B.A. (1967), M.A. (1970), Ph.D. (1970) Rice University
- Brody, Baruch**, 1975. Professor of Philosophy
B.A. (1962) Brooklyn College; M.A. (1965), Ph.D. (1967) Princeton University
- Broker, Karin L.**, 1980. Professor of Art and Associate of Lovett College
B.F.A. (1972) University of Iowa; M.F.A. (1980) University of Wisconsin at Madison
- Brooks, Philip R.**, 1964. Professor of Chemistry and Associate of Lovett College
B.S. (1960) California Institute of Technology; Ph.D. (1964) University of California at Berkeley
- Brooks, Wayne**, 1985. Associate Professor of Viola
Diploma (1977) Curtis Institute of Music
- Brown, Barry W.**, 1970. Adjunct Professor of Statistics
B.S. (1959) University of Chicago; M.S. (1961), Ph.D. (1963) University of California at Berkeley
- Brown, Bryan W.**, 1983. Reginald Henry Hargrove Professor of Economics and Statistics and Associate of Will Rice College
B.A. (1969), M.A. (1972) Texas Tech University; Ph.D. (1977) University of Pennsylvania
- Brown, David**, 1996. Assistant Professor of Architecture
B.A. (1987) Brown University; M.A. (1990) University of California at Berkeley
- Brown, David S.**, 1997. Assistant Professor of Political Science
B.A. (1984) Doane College; M.A. (1991), Ph.D. (1995) University of California at Los Angeles
- Brown, James N.**, 1992. Professor of Economics and Associate of Jones College
B.A. (1973) University of Redlands; M.A. (1975), Ph.D. (1980) University of Chicago
- Brown, Judith**, 1995. Dean of Humanities and Allyn and Gladys Cline Professor of History and Associate of Baker College
B.A. (1968), M.A. (1971) University of California at Berkeley; Ph.D. (1977) Johns Hopkins University

- Brown, Lee**, 1996. Radoslav A. Tsanoff Professor of Public Affairs
B.A. (1961) Fresno State University; M.A. (1964) San Jose State University; M.S. (1968), Ph.D. (1970) University of California at Berkeley
- Brown, Richard**, 1984. Associate Professor of Percussion
B.M.E. (1969) Temple University; M.Mus. (1971) Catholic University of America
- Bryan, William J.**, 1982. Adjunct Professor of Human Performance and Health Sciences
B.A. (1971) Johns Hopkins University; M.D. (1975) Baylor College of Medicine
- Bryant, John B.**, 1981. Henry S. Fox, Sr., Professor of Economics, Professor of Administrative Science, and Associate of Wiess College
B.A. (1969) Oberlin College; M.S. (1973), Ph.D. (1975) Carnegie Mellon University
- Burnett, Sarah A.**, 1972. Associate Professor of Psychology and Associate of Jones College
B.S. (1966) Memphis State University; M.S. (1970), Ph.D. (1972) Tulane University
- Burrus, C. Sidney**, 1965. Maxfield and Oshman Professor of Engineering, Honorary Associate of Will Rice College, and Associate of Lovett College
B.A., B.S.E.E. (1958) Rice Institute; M.S. (1960) Rice University; Ph.D. (1965) Stanford University
- Buyse, Leone**, 1997. Professor of Flute
B.M. (1968) Eastman School of Music; Certificat d'Etudes (1970) Paris Conservatory; M.M. (1980) Emporia State University
- Byrne, John H.**, 1994. Adjunct Professor of Psychology
B.S. (1968), M.A. (1970), Ph.D. (1973) Polytechnic Institute, Brooklyn
- Cafilisch, Anna B.**, 1983. Lecturer on Italian and Associate of Brown College
Liceo Classico J. Stellini, Udine, Italy; Dottore in Lettere (1958) Università del Sacro Cuore, Milan, Italy
- Caldwell, Peter C.**, 1994. Assistant Professor of History and Associate of Will Rice College
B.A. (1987) New York University; M.A. (1990), Ph.D. (1993) Cornell University
- Camacho, Zenaido**, 1994. Vice President for Student Affairs and Professor of Biochemistry and Cell Biology
B.A. (1968) Baylor University; Ph.D. (1970) University of Texas at Austin
- Cameron, Guy N.**, 1992. Adjunct Professor of Ecology and Evolutionary Biology
B.A. (1963) University of California at Berkeley; M.A. (1965) California State University; Ph.D. (1969) University of California at Davis
- Camfield, William A.**, 1969. Joseph and Joanna Nazro Mullen Professor of Art History and Associate of Jones College
A.B. (1957) Princeton University; M.A. (1961), Ph.D. (1964) Yale University
- Campbell, James Wayne**, 1959. Professor of Biochemistry and Cell Biology
B.S. (1953) Southwest Missouri State University; M.S. (1955) University of Illinois; Ph.D. (1958) University of Oklahoma
- Cannady, William Tillman**, 1964. Professor of Architecture
B.Arch. (1961) University of California at Berkeley; M.Arch. (1962) Harvard University
- Caprette, David R.**, 1992. Lecturer on Ecology and Evolutionary Biology
B.S. (1974) Case Western Reserve University; M.S. (1979), Ph.D. (1982) Cleveland State University
- Cardus, David**, 1970. Adjunct Professor of Statistics
B.A., B.Sc. (1942) University of Montpellier, France; M.D. (1949) Barcelona Medical School, Spain
- Carnahan, Norman F.**, 1986. Adjunct Associate Professor in Chemical Engineering
B.S.Ch.E. (1965) University of Houston; Ph.D. (1971) University of Oklahoma
- Carrington, Jr., Samuel M.**, 1967. Professor of French and Associate of Jones College
A.B. (1960), M.A. (1962), Ph.D. (1965) University of North Carolina

- Carroll, Michael M.**, 1988. Burton J. and Ann M. McMurtry Professor in Engineering and Dean of the George R. Brown School of Engineering
B.A. (1958), M.A. (1959) University College Galway; Ph.D. (1964) Brown University
- Cartwright, Jr., Robert S.**, 1980. Professor of Computer Science and Associate of Hanszen College
B.A. (1971) Harvard College; M.A. (1973), Ph.D. (1973) Stanford University
- Casbarian, John Joseph**, 1973. Professor of Architecture
B.A. (1969) Rice University; M.F.A. (1971) California Institute of the Arts; B.Arch. (1972) Rice University
- Castaneda, James A.**, 1961. Professor of Spanish, Honorary Master of Will Rice College, and Golf Coach
B.A. (1954) Drew University; M.A. (1955), Ph.D. (1958) Yale University
- Cavallaro, Joseph R.**, 1988. Associate Professor in Electrical and Computer Engineering and Associate of Lovett College
B.S.E.E. (1981) University of Pennsylvania; M.S.E.E. (1982) Princeton University; Ph.D. (1988) Cornell University
- Chae, Suchan**, 1985. Associate Professor of Economics
B.S. (1978) Seoul National University; M.S. (1980) Jeonbuk National University; Ph.D. (1985) University of Pennsylvania
- Chan, Anthony A.**, 1993. Assistant Professor of Space Physics and Astronomy and Associate of Sid Richardson College
B.Sc. (1982), M.Sc. (1984) University of Auckland; M.A. (1986), Ph.D. (1991) Princeton University
- Chance, Jane**, 1973. Professor of English
B.A. (1967) Purdue University; M.A. (1968), Ph.D. (1971) University of Illinois
- Chang, Yoosoon**, 1995. Assistant Professor of Economics and Associate of Wiess College
B.A. (1989), B.S. (1990) University of Maryland; M.Phil. (1992), Ph.D. (1995) Yale University
- Chapman, Walter G.**, 1990. Associate Professor in Chemical Engineering and Associate of Jones College
B.S. (1983) Clemson University; Ph.D. (1988) Cornell University
- Chase, David J.**, 1995. G. C. Evans Instructor of Mathematics
B.A. (1989) Brandeis University; M.S. (1990), Ph.D. (1995) University of Chicago
- Chen, Lilly C. H.**, 1981. Lecturer on Linguistics
B.A. (1961) National Taiwan University; M.A. (1969), Ph.D. (1974) University of Illinois
- Chern, Shiing-shen**, 1989. Adjunct Professor of Mathematics
B.S. (1930) Nankai University; M.S. (1934) Tsinghua University; Ph.D. (1936) University of Hamburg, Germany
- Christie, Michael Andrew**, 1994. Adjunct Professor in Computational and Applied Mathematics
B.Sc. (1978) Royal Holloway College, University of London; Ph.D. (1982) Imperial College, University of London
- Citron, Marcia J.**, 1976. Professor of Musicology and Associate of Brown College
B.A. (1966) Brooklyn College; M.A. (1968), Ph.D. (1971) University of North Carolina
- Ciufolini, Marco A.**, 1984. Professor of Chemistry
B.S. (1978) Spring Hill College; Ph.D. (1981) University of Michigan
- Clark, Jr., John W.**, 1968. Professor in Electrical and Computer Engineering and Bioengineering
B.S. (1962) Christian Brothers College; M.S. (1965), Ph.D. (1967) Case Western Reserve University

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B.A. (1983), M.B.A. (1990) Rice University
- Cloutier, Paul A.**, 1967. Professor of Space Physics and Astronomy
B.S. (1964) University of Southwestern Louisiana; Ph.D. (1967) Rice University
- Cochran, Tim D.**, 1990. Associate Professor of Mathematics and Associate of Wiess College
B.S. (1977) Massachusetts Institute of Technology; M.A. (1979), Ph.D. (1982) University of California at Berkeley
- Colaco, Joseph P.**, 1975. Lecturer on Architecture
B.S. (1960) University of Bombay, India; M.S. (1962), Ph.D. (1965) University of Illinois
- Colbert, Daniel**, 1997. Faculty Fellow in Chemistry
B.A. (1984) Cornell University; Ph.D. (1990) University of Wisconsin
- Collis, S. Scott**, 1997. Assistant Professor in Mechanical Engineering and Materials Science and Associate of Jones College
B.S. (1990) University of Kansas; M.S. (1991), Ph.D. (1996) Stanford University
- Colvin, Vicki L.**, 1996. Assistant Professor of Chemistry and Associate of Sid Richardson College
B.S. (1988) Stanford University; Ph.D. (1994) University of California, Berkeley
- Connelly, Brian**, 1984. Artist Teacher, Piano Accompaniment, and Vocal Coach
B.Mus. (1980), M.Mus. (1983) University of Michigan
- Conte, Joel P.**, 1990. Associate Professor in Civil Engineering and Associate of Sid Richardson College
Diploma of Civil Engineering (1985) Swiss Federal Institute of Technology, Lausanne, Switzerland; M.S. (1986), Ph.D. (1990) University of California at Berkeley
- Cook, William J.**, 1995. Noah Harding Professor of Computational and Applied Mathematics
B.A. (1979) Rutgers University; M.S. (1980) Stanford University; Ph.D. (1983) University of Waterloo
- Cooper, Bruce F.**, 1986. Lecturer on Biochemistry and Cell Biology
B.A. (1978) Kent State University; Ph.D. (1985) Rice University
- Cooper, Keith D.**, 1990. Associate Professor of Computer Science and Associate of Brown College
B.S. (1978), M.A. (1982), Ph.D. (1983) Rice University
- Copeland, James E.**, 1966. Professor of Linguistics and German and Associate of Baker College
B.A. (1961) University of Colorado; Ph.D. (1965) Cornell University
- Corcoran, Marjorie D.**, 1980. Professor of Physics and Associate of Baker College
B.S. (1972) University of Dayton; Ph.D. (1977) Indiana University
- Cox, Alan L.**, 1991. Associate Professor of Computer Science and Associate of Brown College
B.S. (1986) Carnegie Mellon University; M.S. (1988), Ph.D. (1991) University of Rochester
- Cox, Dennis**, 1992. Professor of Statistics
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- Cox, Edward L.**, 1989. Associate Professor of History and Associate of Wiess College
B.A. (1970) University of the West Indies; M.A. (1973), Ph.D. (1977) Johns Hopkins University
- Cox, Steve J.**, 1988. Associate Professor of Computational and Applied Mathematics and Associate of Wiess College
B.S. (1982), M.S. (1983) Marquette University; Ph.D. (1988) Rensselaer Polytechnic Institute
- Cramez, Carlos A.**, 1988. Adjunct Professor of Geology and Geophysics
B.S. (1960) Universidade de Porto; Ph.D. (1966) Universidade de Neuchatel

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- Crum, Caryn McQuilkin**, 1986. Lecturer on Administrative Science
B.S. (1974) Indiana University; M.B.A. (1977) University of Chicago
- Cunningham, Robert A.**, 1986. Lecturer on Mechanical Engineering and Materials Science
A.A. (1943) Schriener Institute; B.S.M.E. (1949), M.S.M.E. (1955) Rice Institute
- Curl, Jr., Robert F.**, 1958. Professor of Chemistry and Associate of Lovett College
B.A. (1954) Rice Institute; Ph.D. (1957) University of California at Berkeley
- Currall, Steven C.**, 1993. Assistant Professor of Administrative Science and Psychology
B.A. (1982) Baylor University; M.Sc. (1985) London School of Economics; Ph.D. (1990) Cornell University
- Cuthbertson, Gilbert Morris**, 1963. Professor of Political Science and Resident Associate of Will Rice College
B.A. (1959) University of Kansas; Ph.D. (1963) Harvard University
- Cyprus, Joel H.**, 1965. Lecturer on Electrical and Computer Engineering
B.A., B.S.E.E. (1959) Rice Institute; M.S. (1961), Ph.D. (1963) Rice University
- Czerwinski, Mary P.**, 1989. Adjunct Assistant Professor of Psychology
B.A. (1981), M.A. (1983), Ball State University; Ph.D. (1988) Indiana University
- Daichman, Graciela S.**, 1973. Lecturer on Spanish and Associate of Baker College
Profesorado (1958) Instituto Nacional del Profesorado en Lenguas Vivas; M.A. (1975), Ph.D. (1983) Rice University
- Dailey, Jane**, 1994. Assistant Professor of History and Associate of Hanszen College
A.B. (1987) Yale University; M.A. (1989), Ph.D. (1994) Princeton University
- Dakoulas, Panajiotis (Panos) Christos**, 1987. Associate Professor of Civil Engineering and Associate of Hanszen College
Diploma (1980) National Technical University of Athens, Greece; M.Sc. (1982), Ph.D. (1985) Rensselaer Polytechnic Institute
- Daley, Michele J.** 1994. Assistant Professor of Accounting
B.Com. (1985), LL.B. (1993) University of Queensland; M.S. (1992), Ph.D. (1995) University of Rochester
- Davidson, Chandler**, 1966. Professor of Sociology and Political Science
B.A. (1961) University of Texas at Austin; M.A. (1966), Ph.D. (1969) Princeton University
- Davis, Philip W.**, 1969. Professor of Linguistics
B.A. (1961) University of Texas at Austin; Ph.D. (1965) Cornell University
- Davis, Jr., Sam H.**, 1957. Professor in Chemical Engineering and Computational and Applied Mathematics and Associate of Mary Gibbs Jones College
B.A. (1952), B.S. (1953) Rice Institute; ScD. (1957) Massachusetts Institute of Technology
- deHostos, Eugenio L.**, 1995. Assistant Professor of Biochemistry and Cell Biology and Associate of Hanszen College
B.S. (1983) Yale University; Ph.D. (1989) Stanford University
- Dennis, John E.**, 1979. Noah Harding Professor of Computational and Applied Mathematics
B.S. (1962), M.S. (1964) University of Miami; Ph.D. (1966) University of Utah
- DeRose Keith**, 1993. Associate Professor of Philosophy and Associate of Wiess College
B.A. (1984) Calvin College; M.A. (1986), Ph.D. (1990) University of California at Los Angeles

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- Dharan, Bala G.**, 1982. J. Howard Creekmore Professor of Administrative Science and Associate of Baker College
B.Tech. (1973) Indian Institute of Technology, India; M.B.A. (1975) Indian Institute of Management, India; M.S. (1977), Ph.D. (1981) Carnegie Mellon University
- Dickinson, Debra**, 1993. Artist Teacher of Opera Studies
B.S. (1975) Northwestern University; M.A. (1991) Hunter College
- Diddel, Roberta M.**, 1985. Adjunct Instructor of Psychology
B.A. (1976) Wesleyan University; Ph.D. (1989) Boston University
- Dipboye, Robert**, 1978. Professor of Psychology and Administrative Science and Associate of Sid Richardson College
B.A. (1968) Baylor University; M.S. (1969), Ph.D. (1973) Purdue University
- Disch, James G.**, 1973. Associate Professor of Human Performance and Health Sciences and Master of Sid Richardson College
B.S. (1969), M.Ed. (1970) University of Houston; P.E.D. (1973) Indiana University
- Djerejian, Edward P.**, 1994. Director of the James A. Baker III Institute for Public Policy and Robert and Janice McNair Professor of Public Policy
B.S. (1960); Doctor of Humanities (Hon.) (1992) Georgetown University
- Dodds, Stanley A.**, 1977. Associate Professor of Physics and Associate of Wiess College
B.S. (1968) Harvey Mudd College; Ph.D. (1975) Cornell University
- Donelick, Raymond A.**, 1993. Adjunct Assistant Professor of Geology and Geophysics
B.S. (1983) University of Miami; M.S. (1986), Ph.D. (1988) Rensselaer Polytechnic Institute
- Dongarra, Jack**, 1988. Adjunct Professor in Computer Science
B.S. (1972) Chicago State University; M.S. (1973) Illinois Institute of Technology; Ph.D. (1980) University of New Mexico
- Doody, Terrence Arthur**, 1970. Professor of English and Associate of Lovett College
A.B. (1965) Providence College; M.A. (1969), Ph.D. (1970) Cornell University
- Dorough, Aralee**, 1990. Artist Teacher, Flute
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- Doughtie, Edward Orth**, 1963. Professor of English
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B.S. (1971) St. Mary's University; M.S. (1977) University of Miami; Ph.D. (1980) Rice University
- Driskill, Linda P.**, 1970. Professor of English and Administrative Science and Associate of Brown College
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B.S. (1963) Rice University; M.A. (1967) California Western University
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- Eisner, Elmer**, 1988. Adjunct Professor of Computational and Applied Mathematics
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- Engelhardt, Jr., Hugo Tristram**, 1982. Professor of Philosophy
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- Ensor, Katherine Bennett**, 1987. Associate Professor of Statistics and Associate of Lovett College
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- Felleisen, Matthias**, 1987. Professor of Computer Science
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- Frankowski, Ralph F.**, 1970. Adjunct Professor of Statistics
B.S. (1957), M.S. (1959) DePaul University; M.P.H. (1962), Ph.D. (1967) University of Michigan

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- Georges, Eugenia**, 1986. Associate Professor of Anthropology and Associate of Baker College
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- Glowinski, Roland**, 1986. Adjunct Professor of Computational and Applied Mathematics
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- Gorry, G. Anthony**, 1976. Vice President for Information Technology and Professor of Computer Science
B.E. (1962) Yale University; M.S. (1963) University of California at Berkeley; Ph.D. (1967) Massachusetts Institute of Technology
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B.Mus. (1974), M.A. (1975), D.M.A. (1978) University of Michigan
- Goux, Jean-Joseph**, 1990. Lawrence H. Favrot Professor of French
Licence de Philosophie (1965), D.E.S. Philosophie (1966), Doctorat du 3ème cycle de Philosophie (1973), Doctorat d'Etat es Lettres et Sciences Humaines (1988) Sorbonne, Paris
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B.A. (1952) Utica College; M.A. (1957), Ph.D. (1961) University of Wisconsin at Madison
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B.A. (1962), M.A. (1965), Ph.D. (1967) Rice University
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B.S. (1967) University of Michigan; M.Phil. (1969), Ph.D. (1975) Yale University
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B.S. (1967) Massachusetts Institute of Technology; Ph.D. (1971) Brown University
- Harland, Peter W.**, 1989. Adjunct Professor of Chemistry
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- Harman, Thomas**, 1988. Adjunct Associate Professor in Electrical and Computer Engineering
B.S.EE. (1965) University of Maryland; Ph.D. (1972) Rice University
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B.A. (1973) University of California at Los Angeles; M.A. (1980), Ph.D. (1989) University of California at Berkeley
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B.S. (1981) University of Minnesota; Ph.D. (1987) University of Arizona
- Hartley, Peter Reginald**, 1986. Professor of Economics and Associate of Will Rice College
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B.S., M.A. (1963) Carnegie Institute of Technology; Ph.D. (1966) Stanford University
- Haskell, Thomas L.**, 1970. Samuel G. McCann Professor of History
B.A. (1961) Princeton University; Ph.D. (1973) Stanford University
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B.A. (1960) Loras College; Ph.D. (1965) University of California at Berkeley
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B.A. (1956) Rice Institute; M.A. (1959) Indiana University
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B.S. (1963) University of Rochester; M.A. (1965), Ph.D. (1966) Johns Hopkins University
- Haymes, Robert C.**, 1964. Professor of Space Physics and Astronomy and Master of Brown College
B.A. (1952), M.S. (1953), Ph.D. (1959) New York University

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B.S. (1988), Ph.D. (1991) Universitat Trier, Germany
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B.S. (1950), M.S. (1958) University of Texas at Austin; Ph.D. (1961) University of Michigan
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B.A. (1932), M.A. (1936) Ohio State University; Ph.D. (1939) Yale University
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B.Mus. (1982), M.Mus. (1983) Julliard School of Music
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B.A. (1961) Wesleyan University; M.A. (1964), Ph.D. (1966) Yale University
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S.B., S.M. (1970), E.E. (1971), Ph.D. (1974) Massachusetts Institute of Technology
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B.S. (1960), M.S. (1962) University of Cincinnati; M.S. (1965), Ph.D. (1968) University of Michigan
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B.M. (1962) University of Southern California; M.M. (1964) Manhattan School of Music
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- Marcus, George E.**, 1975. Professor of Anthropology
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- Scott, David W.**, 1979. Professor of Statistics
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- Shanks, Jacqueline V.**, 1988. Associate Professor in Bioengineering and Chemical Engineering
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- Stevenson, Paul M.**, 1984. Professor of Physics and Associate of Brown College
B.A. (1976) Cambridge University; Ph.D. (1979) Imperial College
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B.A. (1974) University of Michigan; Ph.D. (1979) University of Texas at Austin
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A.B. (1968) Washington University; M.Div. (1972) Concordia Seminary; M.Phil. (1975), Ph.D. (1980) Yale University
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B.A. (1961), M.A. (1966), Ph.D. (1967) University of California at Los Angeles
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- Taylor, Ronald N.**, 1983. George R. Brown Professor of Administration, Professor of Psychology, and Associate of Baker College
B.A. (1960) Westminster College; M.A. (1964) University of Nebraska; Ph.D. (1970) University of Minnesota
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B.Eng. (1960) Vanderbilt University; M.A. (1963), Ph.D. (1965) Princeton University
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B.S. (1980), M.S. (1984), Ph.D. (1985) Rice University
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B.Eng. (1962), M.S. (1964) Stevens Institute of Technology; M.A. (1967) University of Michigan; Ph.D. (1970) London University
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B.Tech. (1978) Indian Institute of Technology, Kanpur; M.S.E.E. (1980), Ph.D. (1983) University of Texas at Austin
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B.S. (1959) National Taiwan University; Ph.D. (1965) Johns Hopkins University
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- Wells, Jr., Raymond O.**, 1965. Professor of Mathematics and Education and Associate of Baker College
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M.S. (1991), Ph.D. (1996) Rice University
- Wall, Michael E.,** 1995. Robert A. Welch Foundation Postdoctoral Fellow in Biochemistry and Cell Biology
B.S. (1989) University of California at San Diego; M.A. (1993), Ph.D. (1995) Princeton University
- Walters, Deron A.,** 1997. Postdoctoral Research Associate in Chemistry
B.S. (1992) California Institute of Technology; Ph.D. (1997) University of California at Santa Barbara
- Wang, Chuan-Yue,** 1995. Postdoctoral Research Associate in Environmental Science and Engineering
B.S. (1991) East China University of Chemical Technology; Ph.D. (1995) University of Gent (Belgium)
- Wang, Helen,** 1996. Analytical Chemist in Environmental Science and Engineering
B.S. (1970) National Taiwan University; M.S. (1972) Vanderbilt University; Ph.D. (1981) University of Houston
- Wang, Tong,** 1985. Senior Research Scientist in Mechanical Engineering and Materials Science
Ph.D. (1985) Rice University
- Watanabe, Masami.** 1996. Complimentary Visiting Scholar in Chemistry
B.S. (1984), M.S. (1986) Waseda University
- Wayment, Darcey,** 1997. Postdoctoral Research Associate in Chemical Engineering
B.S. (1989) Brigham Young University; Ph.D. (1996) Texas Tech University
- Wei, Kaihong,** 1997. Complimentary Postdoctoral Research Associate in Geology and Geophysics
B.S. (1982), M.A. (1989) China University of Geosciences; M.A. (1992), Ph.D. (1994) Rice University
- Welling, Mark H.,** 1996. Postdoctoral Research Associate in Physics
B.S. (1990) Technische Universitat Munchen; Ph.D. (1995) Ludwig-Maximilian-Universitat
- Wellington, Gerard M.,** 1990. Complimentary Research Associate in Geology and Geophysics
B.A. (1971) San Jose State University; Ph.D. (1981) University of California at Santa Barbara
- Widmer, Markus S.,** 1995. Complimentary Research Associate; 1996. Research Associate in Chemical Engineering
B.S. (1985), M.S. (1988) Engineering College of Basel; Ph.D. (1992) Engineering College of Winterthur, Switzerland
- Wilhelm, Mark,** 1987. Complimentary Research Associate in Chemistry
- Wilson, William K.,** 1982. Assistant Director of Laboratory of Basic Medical Sciences
B.A. (1970) Earlham College; Ph.D. (1982) University of New Mexico
- Wise, J. D.,** 1978. Engineer in Electrical and Computer Engineering
B.A. (1970), M.E.E. (1971), Ph.D. (1977) Rice University
- Wu, Fei,** 1996. Postdoctoral Research Associate in Chemistry
B.S. (1982), M.S. (1985) Jilin University; Ph.D. (1996) University of Puerto Rico
- Wu, Xiangyang,** 1997. Complimentary Visiting Scholar in Geology and Geophysics
B.S. (1982) Zhongshan University; M.S. (1986) Institute of Geophysics
- Xi, Ning,** 1996. Postdoctoral Research Associate in Chemistry
B.S. (1984), M.S. (1987) Peking University; Ph.D. (1996) Rice University

- Xu, Zheng Rong**, 1996. Postdoctoral Research Associate in Mechanical Engineering and Materials Science
B.S. (1982) Kunming Institute of Technology, China; M.S. (1985) University of Science and Technology, China; Ph.D. (1991) University of Tennessee
- Young, Laurence R.**, 1997. Complimentary Visiting Scholar in Biochemistry and Cell Biology
A.B. (1957) Amherst College; S.B. (1957), Sc.D. (1962) Massachusetts Institute of Technology
- Zeldin, Boris**, 1995. Postdoctoral Research Associate in Mechanical Engineering and Materials Science
B.S. (1988) Moscow Civil Engineering Institute; Ph.D. (1995) Rice University
- Zhang, Chaoming**, 1996. Research Associate in Computational and Applied Mathematics
B.S. (1982) Fudan University, China; M.S. (1985) Shanghai Jiaotong University, China; Ph.D. (1996) University of Washington

School of Continuing Studies Program Development Staff

- Carlson-Abbey, Edith**, 1977. Assistant Dean, Director of Programs
B.S. (1976) Georgia Tech
- Hsu, Laura**, 1980. Assistant Dean, Director of Programs
Ph.D. (1974) University of Miami
- McIntire, Mary**, 1975. Dean
Ph.D. (1975) Rice University
- Price, Theresa**, 1996. Program Development Director
B.S. (1983) Texas A&M University
- Sayers, Kathleen**, 1983. Associate Dean, Director of Language Programs
Ph.D. (1981) University of Texas at Austin

Professional Staff of the Fondren Library

- Baber, Elizabeth Ann**, 1965. Head, Database Management
B.A. (1960) Rice University; M.L.S. (1961) University of California at Berkeley
- Bergin, Edward**, 1995. Serials Librarian
B.A. (1973) University of Massachusetts; B.S. (1979) Northeastern University; M.L.I.S. (1991) Simmons College
- Bixby, Mary D.**, 1996. Executive Director, Friends of Fondren
B.S. (1978) East Tennessee State University; M.L.S. (1991) Sam Houston State University
- Boothe, Nancy L.**, 1965. Head, Woodson Research Center
B.A. (1952) Rice Institute; M.S.L.S. (1965) Catholic University of America; M.A. (1979) Rice University
- Caswell, Jean L.**, 1986. Assistant University Librarian
B.A. (1974) New Mexico Institute of Mining and Technology; M.A.L.S. (1976) Northern Illinois University
- Crawford, Esther A.**, 1996. Government Information Librarian
B.A. (1981) University of South Dakota; J.D. (1984) University of Southern California; M.L.I.S. (1996) University of Texas at Austin
- Deakin, Karen**, 1997. Research Librarian
R.N. (1966) Charity Hospital School of Nursing; B.A. (1978), M.L.S. (1979) Louisiana State University

- Edwards, Doralyn H.**, 1996. Public Services Librarian
B.A. (1992), M.S. (1994) University of North Carolina at Chapel Hill
- Edwards, Sandra E.**, 1985. Head, Satellite Collections
B.A. (1980) Grinnell College; M.A. (1982), M.A.L.S. (1984) University of Missouri
- Figg, Milton H.**, 1996. Humanities Reference Librarian
B.A. (1970) University of Mississippi; M.S. (1978), Ph.D. (1982) University of Southern Mississippi
- Flannery, Melinda Reagor**, 1992. Head, Cataloging
A.B. (1977) Wellesley College; M.Div. (1980) Yale Divinity School; M.L.I.S. (1982) University of Texas at Austin
- Flowers, Kay A.**, 1978. Assistant University Librarian
B.A. (1977) Rice University; M.S. (1984) University of Illinois; M.A. (1995) Rice University
- Geran, Jennifer M.**, 1988. Librarian
B.A. (1985) University of Kentucky; M.S. (1988) University of Illinois at Urbana
- Gourlay, Una M.**, 1986. Head, Document Delivery and Fee-Based Services
B.Sc. (1958) University of Glasgow
- Graham, Rose**, 1989. Catalog Librarian
B.A. (1964) Rice University; M.S. (1965) Simmons College
- Hatfield, Joseph W.**, 1984. Assistant to the University Librarian for Building Services
A.A. (1966) Lon Morris College
- Henry, Charles**, 1996. Vice Provost and University Librarian
B.A. (1973) Northwestern Missouri State University; M.A. (1978), M.Phil. (1980), Ph.D. (1987) Columbia University
- Hunter, John H.**, 1979. Engineering Reference Librarian
B.S. (1972) Wiley College; M.L.S. (1974) Indiana University
- Hyman, Ferne B.**, 1968. Assistant University Librarian
B.A. (1948) University of California at Los Angeles; M.A. (1969) Loyola University of Los Angeles; M.S. (1969) University of Illinois
- Keck, Kerry A.**, 1985. Coordinator, Collection Development and Electronic Information Resources
B.A. (1980) University of Colorado; M.S. (1982) University of Illinois; M.B.A. (1991) University of Houston
- Kile, Barbara**, 1971. Assistant to the University Librarian for Public Relations/Development
B.A. (1967), M.S. (1968) University of Illinois
- Kuo, Jiun-Huei Chern**, 1985. Catalog Librarian
B.A. (1978) National Taiwan University; A.M.L.S. (1982) University of Michigan
- Lindquist, Janice**, 1993. Head, Acquisitions
B.A. (1979) California State University at Northridge; M.L.S. (1981) University of Washington
- Lowman, Sara**, 1985. Acting Assistant University Librarian
B.A. (1984) Carleton College; M.A.L.I.S. (1985) University of Iowa
- Marcus, Ellen Y.**, 1996. Manager, Networked Systems
B.A. (1988) Florida State University; M.L.S. (1993) University of Alabama
- Marsales, Rita**, 1973. Preservation Librarian
B.A. (1957) Louisiana State University; M.L.S. (1973) University of Texas at Austin; M.A. (1992) Rice University
- Norman, Mary G.**, 1996. Assistant Acquisitions Librarian
B.A. (1976), M.L.S. (1985) Louisiana State University
- Orkiszewski, Paul T.**, 1992. Music Librarian
B.A./M.A. (1988) Rice University; M.L.I.S. (1989) University of Texas at Austin
- Pavliscaak, Pamela**, 1996. Humanities Information Technology Librarian

538 PROFESSIONAL STAFF

A.B. (1988) University of Michigan; M.A. (1990) University of North Carolina; M.S. (1996) University of Michigan

Prendeville, Jet Marie, 1979. Art and Architecture Librarian

B.A. (1972) Memphis State University; M.A. (1975) University of Michigan; M.S. (1979) University of Illinois

Sabin, Robert G., 1988. Science Reference Librarian and University Associate of Hanszen College

B.S. (1967) University of North Dakota; M.S.L.S. (1968) Clarion University

Segal, Jane D., 1990. Social Sciences Reference Librarian

B.A. (1970) Kalamazoo College; M.L.S. (1977) Western Michigan University; M.A. (1992) University of Houston

Shaw, Peggy A., 1986. Business Librarian

B.A. (1970), B.S. (1972) Louisiana State University; M.L.S. (1982) North Texas State University

Silversteen, Sophy, 1965. Catalog and Reference Librarian

B.A. (1952) Rice Institute; M.S.S.W. (1954), M.L.S. (1965) University of Texas at Austin

Spare, Amy L., 1993. Head, Government Publications and Special Resources

B.A. (1980) Temple University; J.D. (1983) Northeastern University School of Law; M.L.S. (1993) University of Texas at Austin

Tibbits, Randolph K., 1987. Database Searching Librarian

B.A. (1970), M.A. (1977) Washington University; M.L.S. (1980) University of Texas at Austin

Wetzel, Shirley, 1983. Catalog Librarian

A.A. (1960) Navarro College; B.A. (1968) Texas Technological College; M.A. (1980) Rice University

Fondren Library Staff Emeritus

Adler, Marianne G., 1974. Director Emerita, Division of Processing Services

B.A. (1973) Rice University; M.L.S. (1974) University of Texas at Austin; M.A. (1977) Rice University

Charles, Elizabeth D., 1983. Executive Director Emerita, Friends of Fondren

B.A. (1963) University of Texas at Austin

Perrine, Richard H., 1960. Assistant University Librarian for Planning and Adjunct Associate Professor of Architecture, Emeritus

B.F.A. (1940) Yale University; M.L.S. (1961) University of Texas at Austin

Zingler, Gilberta, 1953. Acquisitions Librarian Emerita

A.B. (1932) Butler University; B.L.S. (1935) University of Illinois

Professional Staff of Student Affairs

Clack, Catherine E., 1981. Assistant Dean of Student Affairs and Director of Multicultural Affairs

B.A. (1981) St. Edward's University; M.S. (1993) University of Houston

Crawford, Sarah Nelson, 1987. Director, Office of Student Activities

B.S. (1979) Texas Woman's University; M.A. (1983) Bowling Green State University

Dye, Kenneth, 1980. Director, Rice Owl Band

B.A.Mus. (1974) University of Southern California; M.A.Mus. (1980) Cal State Long Beach; Ed.D. (1983), M.B.A. (1985) University of Houston

Lanier, Cynthia, 1989. Director, Health Education Office

R.N. (1978) Brackenridge School of Nursing; B.A. (1985) University of Texas at Austin; M.P.H. (1987), Dr.P.H. (1995) University of Texas Health Science Center

- Martin, Patricia S.**, 1982. Associate Vice President of Student Affairs and Director, Office of International Education
B.S.Ed. (1959) Abilene Christian University; M.A. (1977), Ph.D. (1982) Rice University
- Matherly, Cheryl**, 1991. Director, Career Services Center
B.A. (1989) University of New Mexico; M.S.Ed. (1991) Indiana University
- Scheid, Mark**, 1984. Assistant Dean of Student Affairs and Director of Academic Advising
B.A. (1967), Ph.D. (1972) Rice University
- Sutton, Stephen**, 1995. Director, Student Center
B.A. (1985), M.A. (1987) Ohio State University

Staff of the Rice Counseling Center

- Doran, Lindley E.**, 1991. Assistant Dean of Student Affairs and Director of Counseling Center
Ph.D. (1976) University of Illinois
- Markum, Deirdre Williams**, 1994. Staff Psychologist
Ph.D. (1993) University of Southern Illinois at Carbondale
- Winters, Michael R.**, 1992. Associate Director
Ph.D. (1991) Memphis State University
- Zozus, Robert**, 1993. Staff Psychologist
Ph.D. (1994) University of Rochester

Staff of the Athletic Department

- Allcorn, A. Dean**, 1995. Associate Athletic Director/Finance
B.B.A. (1978) University of El Paso; J.D. (1989) South Texas College of Law
- Blankenship, D. Paul**, 1980. Women's Tennis Coach
B.A. (1972) Texas Christian University; M.Ed. (1991) University of Houston
- Castañeda, James A.**, 1961. Faculty Representative and Golf Coach
B.A. (1954) Drew University; M.A. (1955), Ph.D. (1958) Yale University
- Clanton, Thomas O., M.D.**, 1995. Co-Team Physician
B.A. (1973) Rice University; M.D. (1976) Baylor College of Medicine
- Cousins, William A.**, 1983. Assistant Athletic Director/Media Relations
B.S. (1971) New Mexico State University
- Davidson, Raymond W.**, 1987. Head Men's Track and Field Coach
B.A. (1962) Rice University; M.Ed. (1972) Texas A&M University
- Eggert, Allen**, 1968. Assistant Athletic Director/Medical Services
B.S. (1963) Rice University; M.A. (1967) California Western University
- Ellis, Richard P.**, 1997. Assistant to the Director of Athletics and Football Coach
B.S. (1968) United States Air Force Academy; M.S. (1973) Texas A&M University; Ph.D. (1981) University of Denver
- Graham, Wayne L.**, 1991. Head Baseball Coach
B.S. (1970) University of Texas at Austin; M.Ed. (1973) University of Houston
- Griswold, Julie L.**, 1986. Assistant Athletic Director/Academic Services
B.A. and B.S. (1981) Miami University; M.S. (1986) Indiana University
- Hatfield, Kenneth W.**, 1994. Head Football Coach
B.A. (1965) University of Arkansas
- Lopez, Victor M.**, 1980. Head Women's Track and Field Coach
B.S. (1971) University of Houston; M.S. (1975) Texas Southern University
- May, John Robert**, 1967. Director of Athletics
B.Comm. (1965) Rice University

- McKinney, Mary Cristine**, 1993. Associate Athletic Director/Women's Athletics and Head Women's Basketball Coach
B.S. (1979) North Carolina State University; M.A. (1982) Western Carolina University
- Moniaci, Steve**, 1980. Associate Athletic Director/Administration
B.S. (1975) Ball State University; M.S. (1976) Ohio University
- Morales, Julio**, 1996. Head Women's Volleyball Coach
B.A. (1974) University of Puerto Rico; M.Ed. (1975) University of Houston; Ph.D. (1991) University of Maryland
- Moss, David K.**, 1989. Compliance Coordinator
B.A. (1983) Huntington College; M.A. (1984) Bowling Green State University
- Pedé, Michael L.**, 1993. Assistant Athletic Director/Marketing
B.S. (1989) University of Houston
- Reeves, Scott R.**, 1996. Head Strength and Conditioning Coach
B.A. (1990) Rice University; M.A. (1992) Texas Christian University
- Smarr, Ronald T.**, 1997. Head Men's Tennis Coach
B.S. (1965), M.S. (1967) Appalachian State University
- Smith, Douglas B.**, 1997. Assistant Athletic Director/Development
B.A. (1969) Kent State University
- Welsh, David E.**, 1991. Ticket Manager
B.S. (1988) University of Kansas, M.S. (1990) St. Thomas University (Florida)
- Wilson, Willis T.**, 1992. Head Men's Basketball Coach
B.A. (1982) Rice University
- Wingenroth, Kristin B.**, 1983. Head Swimming Coach
B.A. (1976) Rice University; M.Ed. (1983) University of Houston
- Winston, Leland A., M.D.**, 1995. Co-Team Physician
B.A. (1969) Rice University; M.D. (1973) University of Texas Medical School

University Standing Committees for 1997-98

The president is an ex officio member of all committees except for the Faculty Council and University Council, which he chairs.

Committee on Admission and Student Financial Aid
 Committee on Affirmative Action
 Committee of the College Masters
 Committee on Computers
 Committee on Environmental Health and Safety
 Committee on Examinations and Standing
 Committee on Faculty and Staff Benefits
 Committee on Judicial Affairs
 Committee on the Library
 Committee on Parking
 Committee on Public Lectures
 Residential Colleges Management Advisory Committee
 Committee on Salary Equity
 Committee on Scholarships and Awards
 Committee on Teaching
 Committee on the Undergraduate Curriculum
 Rice University Athletics Committee
 Rice University Marshals Committee
 R.O.T.C. Committee
 Faculty Council
 Graduate and Research Council
 University Council

Chairs and Lectureships

Throughout its history, Rice University has been especially fortunate in the number of its friends and benefactors. Some of these are memorialized in the names of buildings and special physical facilities; others have generously provided for the enrichment of the university's intellectual life by establishing chairs and lectureships either on a temporary or a permanent basis. Rice takes pleasure in recognizing on these pages some of these contributors to its academic excellence.

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J. S. Abercrombie Chairs in the School of Engineering
 Benjamin M. and Mary Greenwood Anderson Chair in Mechanical Engineering and Materials Science
 Arab American Educational Foundation Chair
 Agnes Cullen Arnold Chair in Fine Arts
 Herbert S. Autrey Chair in Administration
 Herbert S. Autrey Chair in Humanities

Herbert S. Autrey Chairs in Social Sciences (three)
 Lynette S. Autrey Chairs in Humanities (two)
 Lynette S. Autrey Chair in Humanities–Music
 Lynette S. Autrey Chair in Management
 Lynette S. Autrey Chair in Social Sciences
 Isaac and Mildred Brochstein Fellow in Middle East Peace and Security in honor
 of Yitzhak Rabin in the Baker Institute
 Brown and Root Chair in Engineering
 George R. Brown Chair in Administration
 Herman and George R. Brown Chair in Civil Engineering
 Herman Brown Chair in Engineering
 Andrew Hays Buchanan Chairs in Astrophysics
 D. R. Bullard–Welch Foundation Chair in Science
 E. D. Butcher Chairs
 Louis Calder Chair in Chemical Engineering
 Harry S. Cameron Chair in Mechanical Engineering
 Clarence L. Carter Chair
 Chair in Islamic Economics, Finance, and Management
 Chavanne Chair in Religion and Public Policy
 Harry and Hazel Chavanne Chair in Religious Studies
 Allyn R. and Gladys M. Cline Chair in Economics and Finance
 Allyn R. and Gladys M. Cline Chair in History
 John W. Cox Chair in Biochemical and Genetic Engineering
 Carey Croneis Chair in Geology
 Craig Francis Cullinan Chair
 G. C. Evans Instructorships in Mathematics
 W. Maurice Ewing Chair in Oceanography
 Laurence H. Favrot Chair in French
 Anna Smith Fine Chair in Judaic Studies
 Gladys Louise Fox Chair in English
 Henry S. Fox, Sr., Chair in Economics
 Lena Gohlman Fox Chair in Political Science
 Foyt Family Chair in Engineering
 Friedkin Chair in Management
 Gene and Norman Hackerman Chair in Chemistry
 Noah Harding Chair in Computer Science
 Noah Harding Chairs in Mathematics
 Reginald Henry Hargrove Chair in Economics
 A. J. Hartsook Chair in Chemical Engineering
 William Pettus Hobby Chair in American History
 Jesse H. Jones Chair in Management
 Jesse H. Jones Distinguished Appointments in the Jesse H. Jones Graduate
 School of Administration
 Mary Gibbs Jones Chair in History
 W. M. Keck Foundation Chair in Geophysics
 William Alexander Kirkland Chair in Administration
 J. Hugh Liedtke Chair in Management
 Ralph and Dorothy Looney Chair in Biochemistry
 Edgar Odell Lovett Chair in Mathematics
 Henry R. Luce Chair in Engineering Psychology
 Harris Masterson, Jr., Chair in History
 Maxfield and Oshman Professorship in Engineering

Samuel G. McCann Chair in History
 Carolyn and Fred McManis Chair in Philosophy
 Burton J. and Ann M. McMurtry Chair in the School of Engineering
 Janice and Robert McNair Chair in Public Policy
 Andrew W. Mellon Chair in the Humanities
 Andrew W. Mellon Junior Humanities Scholars
 Libbie Shearn Moody Chair in English
 W. L. Moody, Jr., Chair in Mathematics
 Stanley C. Moore Chair in Mechanical Engineering and Materials Science
 Joseph and Ida Kirkland Mullen Chair in Music
 Joseph and Joanna Nazro Mullen Chair in Fine Arts
 H. Joe Nelson III Chair in the Jesse H. Jones Graduate School of Administration
 George A. Peterkin Chair in Political Economy
 Milton B. Porter Chair in Mathematics
 J. Newton Rayzor Chair in Philosophy and Religious Thought
 David Rice Chair in Ethics
 Lewis B. Ryon Chair in Engineering
 Allison Sarofim Distinguished Teaching Professorship in the Humanities
 Faye Sarofim Professorship in Science and Engineering
 The Schlumberger Chair in Advanced Studies and Research
 Elma Schneider Chair in Humanities Designated for The Shepherd School of Music
 Elma Schneider Chair in Social Sciences
 Harry K. and Albert K. Smith Chair in Architecture
 Dorothy Richard Starling Chair in Classical Violin
 Stewart Memorial Chair in Biochemistry
 Henry Gardiner Symonds Chair in Administration
 Texas Instruments Visiting Professorship
 Albert Thomas Chair in Political Science
 Radoslav A. Tsanoff Chair in Public Affairs
 Isla and Percy Turner Chair in Biblical Studies
 William Gaines Twyman Chair in History
 Robert A. Welch Chair in Chemistry
 Harmon Whittington Chair in Administration
 Harry Carothers Wiess Chair in Geology
 Harry Carothers and Olga Keith Wiess Chair in Natural Sciences
 Sam and Helen Worden Chair in Physics
 Gus Sessions Wortham Chair in Architecture
 Visiting Asian Scholars Lectureship Fund

Lectureships

Gene Brice Colloquium Fund for Electrical Engineering
 Brown Foundation—J. Newton Rayzor Lectures
 Carroll Camden Lectureship in English Literature
 William Wayne Caudill Lecture Series in Architecture
 William B. Coleman, Jr., Colloquium Fund for Architecture
 English Department Distinguished Professor Lectureship
 Joe L. Franklin Lectureship in Physical Chemistry
 Hanszen College Fund for Aaron Seriff Lectures
 W. V. Houston Lectureship
 James Baker Hughes Lecture Fund
 Ervin Frederick Kalb Lectureship in History
 Thomas W. Leland Visiting Lectureship in Chemical Engineering

W. Oscar Neuhaus Memorial Lectures in the Jesse H. Jones Graduate School of Administration

Fred and Mabel R. Parks Foundation Endowed Fund

The Rockwell Lectures

Harold E. "Bud" Rorschach Memorial Lecture Fund

The Harold E. and Margaret R. Rorschach Memorial Lectures in Legal History

Tsanoff Lectureship in the Humanities

Dr. Thomas J. and Jane A. Vanzant Lectureship

Paul C. Wilber Lectureship in Chemical Engineering

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NOTE: This catalog represents the most accurate information available at the time of publication. The university reserves the right to correct or otherwise change any such information at its sole discretion. With respect to course offerings, the departments have attempted to anticipate which courses will be offered, and by whom and when such courses will be taught. However, course offerings may be affected by changes in faculty, student demand, and funding. Although efforts have been made to indicate these uncertainties, where appropriate, course offerings are subject to change without notice.

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Office of Admission—MS17

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